
# NURSING AT HOME

## *WITH CHAPTERS ON THE CARE OF INFANTS AND CHILDREN.*

BY

D. E. MORTIMER, M.B. LOND., F.R.C.S., ENG.

*Lecturer and Examiner London County Council, formerly Registrar at The Hospital for Sick Children,*

AND

R. J. COLLIE, M.D., ABERDEEN,

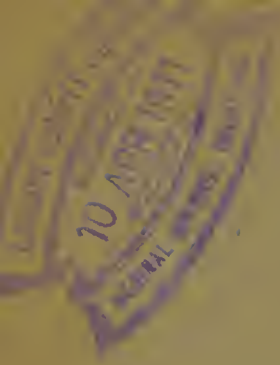
*Medical Superintendent of the Hygiene, Ambulance and Home Nursing Classes of the London County Council.*

**Eightpence, net.**

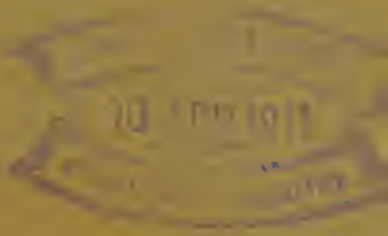


London:

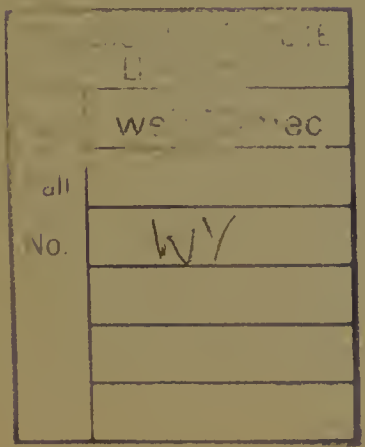
GEORGE GILL & SONS, LD., 13 WARWICK LANE, E.C.




22101922835



# NURSING AT HOME.



# PRESS NOTICES.

*The Nursing Times* says:

**Nursing at Home.** By J. D. E. Mortimer, M.B., and R. J. Collie, M.D. (George Gill & Sons.)

This is a most admirable little book, and will be welcomed alike by nurses, health lecturers, and all interested in home hygiene and the care of the sick. The information is given in a simple and practical manner, but is thorough and up-to-date; and what make it of special value for district work are the suggestions for extemporising nursing appliances, such as a bed-table made of books and a pastry-board, a cradle improvised out of a band-box, etc. Illustrations are given both of the real article and of the improvised one, which will be of great assistance to the amateur. The frontispiece, which gives the interior of a nursing room, is very suggestive, and both illustrations and the tables on infant feeding and infectious diseases are clear and well arranged.

The chapters on the care of babies and young children are excellent; that on the latter is specially welcome, as so often nursing text-books take one no further than the first year of child life. We are glad to see that attention is called to the so-called "growing pains" of children, and commend such a sensible but rarely followed precaution as shaving the moustache of a man suffering from consumption.

The following journals in their criticism support the above:—

*British Medical Journal.*
*Caledonian Medical Journal.*
*West London Medical Journal.*
*Treatment.*
*Scottish Medical and Surgical Journal.*
*Sanitary Record.*
*Local Government Officer.*
*Educational News.*
*Schoolmaster.*
*St. Bartholomew's Hospital Journal.*


# NURSING AT HOME

## *WITH CHAPTERS ON THE CARE OF INFANTS AND CHILDREN.*

BY

J. D. E. MORTIMER, M.B. LOND., F.R.C.S., ENG.,

*Lecturer and Examiner London County Council, formerly Registrar at The Hospital for Sick Children,*

AND

R. J. COLLIE, M.D., ABERDEEN,

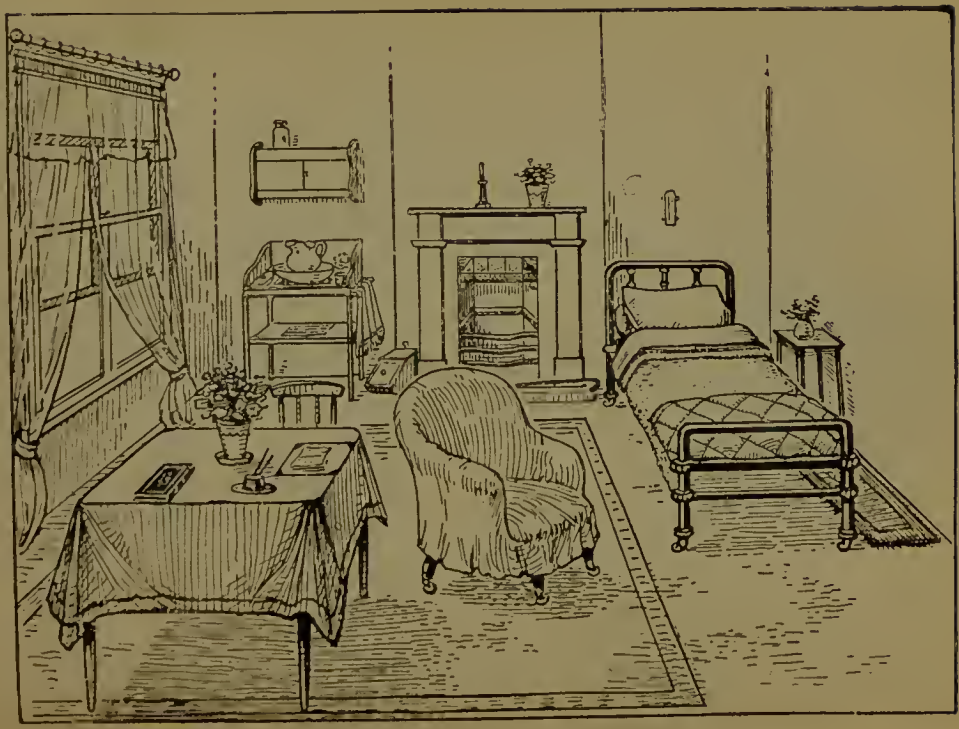
*Medical Superintendent of the Hygiene, Ambulance and Home Nursing Classes of the London County Council.*

**Eightpence, net.**



London :

GEORGE GILL & SONS, LD., 13, WARWICK LANE, E.C.



ARRANGEMENT OF A NURSING ROOM.

# PREFACE.

In this Manual we have endeavoured to impart knowledge of Nursing and of the Care of the Young, which it is desirable that all women, especially mothers of families, should possess.

Technical terms have as far as possible been avoided. In order that the directions given may be carried out with intelligence, some elementary physiology and hygiene has been necessary; this we have endeavoured to set out in simple language.

The Chapters correspond with the Syllabus of the London County Council, and it is hoped that the book will be especially useful to candidates for its Certificate. Some paragraphs, enclosed in brackets, need be read only by candidates for the Teachers' Certificate.

We are indebted to many lecturers for valuable assistance, and we need hardly add that criticisms and suggestions for the improvement of future editions will be thankfully received.

R. J. Collie.
J. D. E. Mortimer.

*R. J. C., 25, Porchester Terrace, W.*
*J. D. M., 15, St. Leonard's Terrace, Chelsea, S.W.*

## CHAPTER I.

### The Qualifications and Duties of the Nurse. Visitors. The Sick Room and its Appliances.

**The Qualifications and Duties of the Nurse.**—Some persons are naturally gifted with the good qualities—gentleness, tidiness, a good memory, and many others—which will help them to become better nurses than others not so fortunate. It is often not understood, however, that it is impossible for even these to attend properly to the sick and to avoid making serious mistakes, without certain instruction in the principles and practice of nursing.

The nurse should be quiet, but decided and not stealthy in her movements, and should speak in a low, distinct voice, but not whisper. She must not wear rustling skirts, jingling ornaments, nor squeaking shoes. She must try to be attentive without being fussy; firm, but not harsh; and to be cheerful and placid even when the patient is irritable and unreasonable, always remembering that illness may affect the temper and not only the bodily health. Whatever happens she must try to keep calm, and she must always do her best to conceal the fatigue or anxiety she may naturally feel. She should never, if she can help it, let the patient be troubled by any bad news or household worries, and on no account should she encourage talking over the illness in the presence of the patient, or allow dreadful details of other cases to be recounted. Noises in the house must, as far as possible, be prevented; and, in serious cases, those made by neighbours or in the street.

**The Doctor's Visit.**—Patients and nurses naturally like to have everything in good order for the doctor's visit ; but the patient must not, as sometimes happens, be exhausted by too much washing and changing of linen beforehand. Hot and cold water, unscented soap, a nail-brush, and a clean towel should always be ready for the doctor's use ; also the notes and charts (see further), and dressings, safety pins, etc. (in surgical cases).

A book should be kept in which the nurse must note any *fact* (but not her own opinions) in connection with the patient at the time that it occurs, or as soon afterwards as possible. Accuracy is most important. It is no use, for example, to record that a patient "drank a good deal of milk during the night." The exact amount and the exact times when taken must be stated. It is a good plan also to note, as they occur to her, any questions she may wish to ask the doctor.

This book is for the doctor to read, and not the sick person, who should not see it. The nurse, *whilst in the room with the patient*, should be careful never to ask the doctor such questions as, "How do you think he is to-day?" nor to ask about the meaning of symptoms that may have occurred since his last visit, as he may find it difficult to give a truthful answer without alarming the patient. The doctor should not be disturbed (for instance, by being asked questions) whilst he is making his examination. nor when he is writing a prescription. Patients often like to be alone for a time with the doctor, and the nurse should not stay in the room during the whole visit, but remain close at hand in case she is wanted. When the doctor leaves, the nurse must follow him into an adjoining room or downstairs, so that he may be able to give his directions. If she does not understand these, or thinks

there will be difficulty in carrying them out, she must at once say so. It need hardly be said that the doctor's instructions must be implicitly obeyed, so far as lies in the nurse's power, and she should not discuss them with the patient ; but if she has forgotten, or been unable to carry out any given at a former visit, the doctor must, in the interests of the patient and in fairness to himself, be told so without hesitation.

A good nurse must herself be in good health. An anæmic, nervous person is sure to be a failure, although her knowledge may be considerable and her intentions excellent. The nurse must be careful of her own health if she wishes to do the best for her patient. She should have regular hours for undisturbed sleep and for daily exercise in the open air. Her food should not be taken in the sick room. Personal cleanliness is, of course, essential. The use by the nurse of scent and of scented soaps is disliked by many patients. The nurse's hands must be carefully treated, and not allowed to become rough and chapped by putting them into soda, too strong antiseptics, etc. After washing they should be thoroughly dried, and a little oatmeal or similar powder used. The nails must be cut evenly and *short*, and the fold of skin at the bottom pushed down, but *not* clipped ; the nails should not be " cleaned " by anything but a nail-brush. It is occasionally advisable, when dealing with offensive discharges, etc., to fill the nails with soap and smear the hands with an antiseptic ointment. Grazes or cuts must be carefully protected by collodion, plaster, or a rubber finger-stall.

Dresses of some washing material are most suitable for a nurse, extra underclothing being worn if necessary. In any case, a large apron with a bib, or a holland overall, should be put on ; the sleeves must not be hanging, and

when washing the patient, etc., they should be turned up to the elbow, or loose washable oversleeves used. Rings should never be worn when at work.

The patient must be settled for the night at a regular and early hour.

When going on night duty, the nurse must see that everything (such as fuel, a lamp or candle, matches, medicine, bed-pan, etc.) has been provided which she is likely to want, and that she can quickly call assistance if the case is serious. The fire should be made up and packed. Any food likely to be wanted should be kept covered up outside the room. In hot weather, milk, jelly, etc., may be put on the window-sill with a wet towel round the jug or basin, if there be no ice.

There should be some light nourishment at hand, which requires little preparation. This is especially necessary for old or exhausted patients in the early morning. A night-light, also a spirit lamp or food-warmer are useful, especially in summer. The nurse will probably need a wrap for herself in the chilly early morning hours. When a patient is sleeping the slightest noise, even the striking of a match, in the room must be avoided.

No one should attempt both day and night nursing, except in slight illness. A nurse who is up all night should have a good supper before going on duty, some light nourishment in the middle of the night and early morning, and a good meal when coming off duty. She should then go out, and go to bed for the afternoon and part of the evening, in time to get *at least* seven hours' sleep. When there is a change of nurses the one who is going off duty must give the one who is coming on, her report and the doctor's instructions.

**Visitors.**—The doctor's orders with regard to the number

of visitors and the length of their stay must be strictly obeyed. They should never be allowed to interfere with the patient's meals or rest. A card may be hung outside the door to prevent knocking when a patient is asleep. The effect of visitors on the patient must be carefully noticed not only at the time, but afterwards. Harm may be done by people who are too boisterous and talkative, just as much as by those who are too dismal. Visitors should sit where the patient can see them without trouble; usually not more than one or two should be allowed at a time. They should not linger when saying good-bye, nor stand talking to the nurse just outside the door.

## The Sick Room.

*Considerations affecting selection.*

1. **Nature of Disease.** If the case be infectious it should be isolated on a top storey or at the end of a passage, but in the case of a prolonged illness, or one which is not very severe, it is better that it should not be far away from the rest of the household; the nurse may be overworked, or the patient left too much alone if she has to go up and down many flights of stairs.

2. **Outside.** It should be light, airy and cheerful, but free from noises, smells and dust; if possible with a south-west (certainly not with a north-east) aspect.

3. **Inside.** The room should be large and airy, but not so large as to make it difficult to keep warm and clean. There must be a fire-place with an open register. Sash windows, with blinds or curtains in good order, are most convenient.

Rattling of doors or windows must be prevented by wedges. If the room can be prepared beforehand, all furniture, carpets, curtains, pictures should be removed; walls, mouldings and the top of the door dusted, the floor scrubbed and paint washed. The fire-place should be tested by lighting a fire. It should be ascertained that the fastenings of the doors and windows and the sash cords are in order, and the windows opened top and bottom. The room must, of course, be thoroughly dry before the patient comes into it. It is a great advantage to have a water supply and a w.c. near at hand.

Furniture, curtains, etc., should be as simple and as easily cleaned as possible (a cane chair, for instance, being preferable to a stuffed one). The less there is in the room the better. Furniture not in actual use collects dust and makes it difficult to get this out of the room —it also gets in the way, and takes up space which should be occupied by air for the patient to breathe. The floor may be covered with linoleum, but should not be covered with a carpet—loose rugs or strips of carpet may be used, as these can be taken away to be shaken or cleaned. Tea-leaves or sawdust should be used when sweeping the boards. Damp cloths should be used for wiping furniture, etc., in preference to dry dusters. "Making a dust" can generally be entirely avoided with care, but when this is unpreventable, a piece of muslin should be spread over the patient's head and face and the bed covered by a sheet.

**Dark** blinds or window curtains are useful for excluding light when the patient is resting—care being taken to draw them without noise. Flowers should be chosen which are not strongly scented; they must be frequently changed and taken out of the room at night. One or two cheerful-looking pictures may be hung and changed

occasionally. The sick-room must always be tidy. No slops, soiled linen, food that has not been eaten, should be allowed to remain. Medicines, etc., should not be placed within view of the patient.

**Lighting.**—The patient's bed should not be so placed that it faces the window or any fixed light, such as gas, but sideways to it. If possible, however, it should be so placed that the patient can look out of the window, when he wishes. No light should ever be allowed to shine in the patient's eyes, and at night, and when there is inclination for sleep, all light must be carefully screened.

**Warming.**—Do not attempt to warm a room by burning lamps or gas intended for lighting it. No gas or oil stoves should be used unless the impurities caused by their burning pass up a special flue or chimney. Coal should be sent up in medium sized lumps which can be picked up by the fingers (an old glove being used for the purpose) to avoid noise; and for the same reason a stick used instead of a metal poker. Do not put the coal on in paper bags (sometimes advised) as these are apt to break or burn through suddenly, letting the coal down with a crash.

The room should, in most cases, be kept at about 60° (50° too cold, 70° too hot) unless otherwise directed by the doctor. A thermometer should be kept *not* on the mantelpiece nor close to the window, but near the bed. The top of the column of mercury or spirit shows the degree of warmth—use one with a large column that can be easily read. Do not confuse purity of air with warmth; the conditions that have made a room warm, such as burning several gas-jets or the presence of too many people, have probably also made it impure. It is quite possible, however, for the air of a room to be both warm and pure on the one hand, and on the other, for it

to be both cold and foul. Remember, that the coldest time is during the small hours of the morning, and it is then that a fire is most wanted.

**The Bed** should be a single one—so that the nurse can easily reach the patient—with its head a foot and a half from the wall, and, if possible, space for a person to stand between the wall and its side. Valances interfere with ventilation and harbour dust. Keep nothing under the bed. A feather-bed must on no account be used—it is always unhealthy, and, in case of illness, it is impossible to prevent it from becoming lumpy, or to properly move or wash the patient. A hair mattress is best, or for cheapness, especially if there be risk of soiling, a clean chaff one. Thick cotton counterpanes are heavy without being warm. Do not have many folds of blankets about the shoulders and chest, but rather over the feet. The bolster should be in a separate case. The upper pillow should not be too soft.

If the head has to be high the pillows must be so arranged under the *neck and shoulders* in a sloping manner so that it is not bent forward. The head should be lifted by passing the hand under the upper pillow whilst the pillows below are put into place. In changing the upper pillow the hand must be slipped under the head, and, if possible, another pillow should be ready to put under it at once. The under blanket and sheet must be kept smooth by fastening them to the mattress with safety pins, or to the bedstead with tapes, if they cannot be tucked well in.

If the patient has to lie constantly on the back, the strain on the loins may be relieved by placing a very small pillow under them, or by bending the knees over a pillow.

If the patient is well enough, the bed should be re-made and aired daily. If able to sit up he should be placed on

an easy chair which has been first spread with a warmed blanket. This should be wrapped all round him, especially his feet and legs. The mattress should be shaken and turned, and the sheets and blankets spread to air, if possible, outside the room. On returning to bed the patient should continue rolled in the blanket until the bed is warm. If not able to sit up he may be moved, if well enough, to a couch or another bed, a blanket being provided as before.

**To Change the Under Sheet.**—If he is not able to leave the bed, the clean sheet must first be *warmed* and rolled up lengthwise for half its breadth and the bedclothes all round loosened. Turn the patient on one side, say his left, by crossing his right leg well over his left and taking hold of the hips and shoulders without uncovering him; roll up the soiled sheet as far as possible towards his back, then place on the bed against it the rolled-up part of the clean sheet (the unrolled part will cover the right half of the bed); now turn the patient on his right side, so that he rolls over on to the clean sheet; take away the soiled sheet from behind him and spread out the clean sheet over the *left* half of the bed. If he cannot be turned on his side the change may be made from below upwards, by rolling the sheet breadthwise and lifting in order the feet, legs, hips, shoulders and head, unrolling the clean sheet and rolling the soiled one as one goes along.

A **Draw Sheet** is used when the middle of the under sheet is in danger of being soiled, and should reach from the waist to the knees, and extend right across the bed. It must be kept smooth and tight, and, if soiled, should be entirely removed, except, perhaps, in some cases of frequent wetting, when the dry reserve or extra length on one side may from time to time be drawn under the patient as the

wetted part is rolled up on the other side. It may be necessary to protect the mattress by having under the draw sheet, a mackintosh, tarred paper, an old blanket folded, or a layer of tow well pulled out.

It may be changed by rolling like the under sheet, or by safety-pinning the clean one to the *under* surface of the soiled one on one side, and pulling through from the other side after raising the patient at the hips.

The upper sheet is best changed thus: untuck all the bed-clothes, take off a blanket, spread the warmed clean sheet on the top of the remaining bedclothes, and upon it spread the blanket: then let one person hold this blanket and clean sheet firmly on one side, the hands separated as far as possible, whilst another standing opposite, also with hands separated as far as possible, pulls from underneath them the rest of the bedclothing, including the soiled upper sheet, leaving the patient covered by the clean sheet and blanket. The clean sheet and blanket may be fixed by tucking it well under the mattress, all down one side, if the nurse has no one to help her.

If there is no high footrail to the bedstead they can be pulled out better from below, the clean sheet and blanket being held above by a hand on each side of the patient's shoulders.

A **Bed Table** is useful when the patient can sit up. This may be improvised by putting boxes or books on each side of the patient's thighs outside the clothes, and resting on them a board, such as a knife or pasteboard. Special tables and appliances for the purpose may, however, be procured.

**Bed Pans, etc.**—As a general rule a person who is ill enough to be in bed should not go out of the room to the W.C., especially in cold weather or if this is far from the

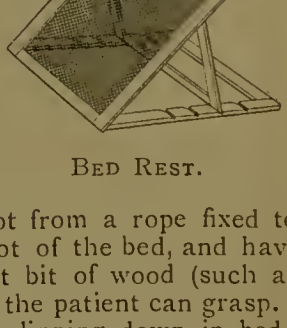
bedroom. A warm dressing-gown or other clothing must at any rate be worn, and a blanket taken to wrap round the legs. If a commode or bedpan is used some water should be put in previously, and it should afterwards be at once covered, taken *out* of the room, emptied, and rinsed thoroughly with hot water and soda, unless there is anything unusual, when it should be covered up without adding a disinfectant and kept (for the doctor to see) in the W.C. or outside the house. In some cases disinfection is required (see further). No patient, especially if old or weakly, should suddenly sit up in bed, still less suddenly get up and stand, after having been lying down for some time, as faintness is often produced.

If the doctor directs that the patient is not to leave bed "for any purpose," nor to sit up in bed "for any purpose," his direction must be literally obeyed. In such cases, and also where there is general weakness a bedpan is needed when there is desire to pass water (urine) or a motion (fæces). Men or boys, however, can use an ordinary wide-mouthed bottle or a "urinal," sold at the chemist's, for passing urine only. Bedpans are round or slipper shaped. They should be warmed before use by placing in front of the fire or dipping in hot water. The slipper shape is convenient for those who cannot be easily raised in bed, otherwise the round one is better. In case of emergency a dish or soup-plate may be used or even a dust-pan, the edge being guarded with flannel, and the handle held well down.

A little oil or vaseline should be smeared on the upper edge of the slipper pan, and it should be passed under the thighs with one hand and pushed beneath the buttocks, whilst the other hand slightly raises the latter part, the patient lying meanwhile on the back with the legs bent.

**Bed-rests** support a patient who sits up in bed. For a substitute a chair is turned upside down so that the patient can lean on the sloping back, pillows being arranged as required. (The chair would, of course, be placed upon the top of the lower sheet and bolster, not as in the drawing.)

IMPROVISED BED REST.

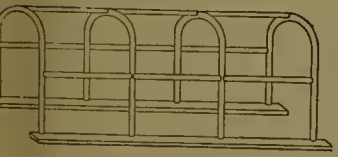


BED REST.

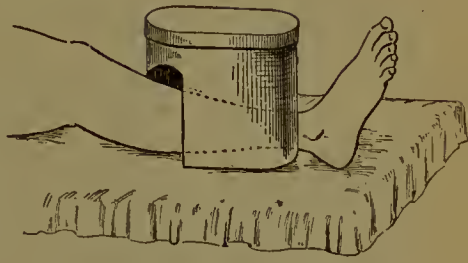
Help in movement may be got from a rope fixed to a beam in the ceiling or to the foot of the bed, and having crosswise at its free end a stout bit of wood (such as a piece of a broom handle) which the patient can grasp. A patient may be prevented from slipping down in bed by putting across the bedstead under the mattress a bar or short pole which will raise the latter just below the seat, or (when a patient is sitting up) by tilting up the foot of the bed on blocks or books.

**Bed cradles** keep the bed clothes from pressing on an injured part, generally the leg. Sometimes a stool may be found which will answer; a chip hat box may be taken, the cover taken off, and holes (like the hole in a dog kennel) cut in it, so that it may be turned upside down and placed

over the leg; the cover may be placed on the bottom (now uppermost) to strengthen it.



BED CRADLE.



IMPROVISED BED CRADLE.

**Bed Sores.**—These are often, but not always, a sign of bad nursing. They are likely to occur when there is continued pressure on a part from the patient lying long in one position, especially when there is but little padding of fat between the skin and the bones. Hence great care must be taken in typhoid, consumption, paralysis, fractures. old age. Wetting or rucking up of the sheets, crumbs in the bed, tend to produce them. Examine the skin carefully every day, especially back, hips, heels, etc.

The position should be changed as often as can be done without detriment to the patient, and pressure taken off by arranging water- or air-cushions or pads in the form of rings or horseshoes; these may be made of tow or wool and covered. The skin must be washed daily and whenever soiled, carefully dried by gentle pressure (not rubbing) of a warm, soft towel, dabbed with spirit and well powdered. If there be constant wetting, an ointment such as vaseline is better than powder, and some tow (well pulled out), tenax or absorbent wool kept in place and often changed. A mackintosh or piece of oilcloth is often put under the draw-

sheet to protect the mattress, but is apt to confine perspiration and sodden the skin—an old blanket folded is better. If the skin get red or discoloured, the doctor's attention must be at once drawn to it.

**Air-Cushions and Water-Beds** must be guarded from contact with everything greasy or oily, which spoils rubber. A water-bed or cushion should never be strained by lifting it with the water in it. It must be filled when on the bed. *Warm* water should be poured in until it is about half-full, then some air blown in until it is neither too tense nor too slack, but so that it will give slightly to the weight and movements of the patient, without letting him down to the bedstead or mattress underneath.

**Ventilation.** When a fire (or a lamp or gas) burns, gases are formed, chiefly one called carbonic acid gas. If the fire is to go on burning, this must be replaced by another gas contained in the air, called oxygen. In the same way the living tissues of our bodies slowly consume the food we eat by a process similar to burning. The carbonic acid gas and other impurities (with which the blood becomes charged) must be got rid of, and replaced by oxygen. **Inspiration** is breathing in, that is, taking air which is pure (or ought to be pure) into the lungs. The lungs are two large spongy organs situated in the chest. The air which enters the lungs contains oxygen. The blood is pumped through the lungs by the heart. During its passage it absorbs the oxygen from the air in the lungs and gives off in exchange carbonic acid gas and other impurities. The air thus made impure is breathed out by the act of **expiration.**

---

*Paragraphs enclosed in brackets [ ] should be read by Candidates for the Teacher's Certificate of the L.C.C.

[*The blood is a very complex fluid, which is continually kept moving or

**circulated** (chiefly by the pumping action of the heart) through a system of tubes or blood-vessels. In man and other highly organised members of the animal kingdom, there is a double circulation—the blood being driven (1) from the left side of the heart all over the body (except the lungs) and back to the right side of the heart; (2) from the right side of the heart through the lungs and back to the left side of the heart and so on. It is driven from the left side of the heart into vessels called **arteries**, which divide and subdivide into smaller and more numerous vessels called arterioles, finally becoming a fine network of tubes (**capillaries**) of microscopic size, which are so closely set that in most parts of the body it is impossible to insert a needle, for instance when the finger is pricked, without piercing some of these capillaries and allowing the blood to escape. The capillaries rejoin together to form **veins** by which the blood is conveyed to the *right* side of the heart,—thence it is driven through the **pulmonary artery** to the lungs, where a similar distribution by means of capillaries takes place, and from them it is returned by the **pulmonary veins** to the left side of the heart and so on. Now, owing to the facts that the walls of the capillary blood-vessels are extremely thin, and are composed of living material, the blood performs two great functions: (1) it takes to every part of the body nourishment which it has taken up from the organs which digest our food, and also oxygen from the air which enables chemical changes to take place resulting in the production of heat and output of muscular, nervous, and other forms of energy; (2) it removes the waste and impurities (comparable to the smoke and ashes of a fire) which are the by-products of these processes, and takes them to those organs whose business it is to get rid of them.

The windpipe is a stiff tube which opens above through the larynx or voice-organ into the throat, and passes from the front of the neck into the chest, where it divides behind the breast-bone into two bronchi (right and left). Each bronchus divides and subdivides until the ultimate tubes are extremely small, but instead of running into one another like the capillary blood vessels, the bronchioles end in blind extremities consisting of little pouches or air cells, on the walls of which are distributed the capillary blood-vessels; the lungs (which fill almost the whole chest with the exception of the room occupied by the heart and large blood-vessels), consisting entirely of these air-tubes, air-cells and capillaries, with the tissue holding them together. There is no *mixture* of blood and air in the lungs—the blood is held in the capillaries and the air in the air-cells—but the exchange of carbonic acid and other gaseous impurities (which the blood has taken up in its circulation through the tissues of the body), for the oxygen of the air, is made possible by the extreme delicacy of the walls of the capillaries and air-cells allowing certain physical laws regarding the mingling of gases to come into operation. Evidently the air in the little cells must be renewed or it would soon be so charged with carbonic acid that no such exchange could take place. This is effected by the movements of **respiration**. When we take a breath, the muscles attached to the ribs so lift and turn them on the joints by which they are attached to the spine that the capacity of the chest is increased from front to back and from side to side, while at the same time a large flat muscle called

the diaphragm or midriff descends, and so increases its capacity from above down, acting just as the sucker or piston in a syringe. Fresh air is thus drawn into the air-cells through the bronchi and windpipe. When relaxation of the diaphragm and other muscles occurs, the ribs again sink, the elastic lungs retract, and some of the air in them is driven out, carrying with it much water in the form of vapour, carbonic acid gas and other impurities. It is a natural law that gases rapidly commingle even when they are of different degrees of density, and without the aid of currents caused by heat or otherwise, hence even in the absence of wind or change of place these gases which are poisonous to the animals who have excreted them, quickly diffuse in the open air, and are used up by plants which give us back the oxygen essential to our life.

Fresh air contains about 21% of oxygen and 79% of nitrogen with a trace of carbonic acid gas (·04%). Exhaled air contains only 16% of oxygen, over 4% of carbonic acid gas, some ammoniacal compounds, and watery vapour in addition.

Carbonic acid gas is a good index of the condition of the air, but is not so much of a direct poison as the effete animal matter which is at the same time thrown off in the watery vapour of the breath. It is probable that quite apart from the excess of such impurities, air which has once been breathed has undergone other subtle chemical changes not fully understood, and has become "devitalised" and deteriorated, to be revived only by the action of winds, sunlight, and vegetation.

The movements of respiration also assist the circulation by aspirating or drawing blood through the veins to the heart, as well as air through the windpipe to the lungs. The circulation is further aided by the contractions of the muscles (which cause movements in the limbs) squeezing the veins and absorbents, and so driving on the fluid contained in them, a return being prevented by little valves which permit a flow only in the right direction.

It will be seen that in order that we may breathe properly, many conditions are necessary. There must be a free supply of pure air; there must be nothing to interfere with its passage to the lungs; the muscles and walls of the chest must be in good order, and the heart must vigorously propel the blood. If not, waste products accumulate and the result is the same as when a fire dies down on account of insufficient draught, and is smothered by its own ashes.]

Carbonic acid gas is taken as the standard of impurity in the air. Expired air (air breathed out from the lungs), contains 440 parts in 10,000 (about 4½ per cent.). Fresh air contains only four parts in 10,000, or a hundred times less; and if there are more than six parts in 10,000 the air is foul. If impure air is breathed habitually there is a

general lowering of the health, which causes greater liability to disease, especially to anæmia (poverty of blood) and to consumption.

In all cases of illness the blood is charged with impurities more than in health, and so the air of the room is more quickly made unfit for breathing. A constant supply of pure air is therefore of the utmost importance. Often the breathing is hampered by the disease—in bronchitis or pneumonia, for example, the lungs are clogged; in other diseases there may be an obstruction to the flow of blood through the lungs, or the heart may be too weak to drive it on properly; and as under such circumstances as much air cannot be conveyed to the blood as in health, there is all the more necessity that this air should be pure. It is also very important that there should be no interference with the movements of the chest and abdomen in breathing; the nurse must see there is no tight clothing nor heavily-folded blanket which does not allow free play.

[There are three natural forces utilized in systems of ventilation.

(1) **Diffusion of Gases.** When gases of different composition come into contact they tend to mix in spite of the fact that one may be heavier than the other. In this way the air which is breathed out mixes with the other air in the room and diffuses through open windows, doors, and crevices.

(2) **Difference in Density of Gases.** When air is warmed it expands, and therefore warm air is lighter than the same bulk of cooler air, and if both are together in a room, the cooler air sinks towards the floor and the warmer air floats towards the ceiling. Air which has been made impure by breathing or combustion is heavier than ordinary air of the same temperature, and, therefore, although (being warm) it first rises, as soon as it cools it falls, and is again breathed, although, of course, it has become diluted by diffusion. It is, therefore, very necessary that in the absence of open windows there should be some advantage taken of this natural law and the impure air got rid of before it cools. This has been done in public buildings, lit by gas, by perforations above the burners leading to tubes by which it may escape.

(3) **Winds** force air through openings and also suck air from the inside, especially when passing over the tops of chimneys.]

Ventilation means the **continuous** exchange of fresh air

for foul. Air in a room is used up and made impure not only by **breathing,** but also by any kind of **burning,** such as that of candles, lamps or gas. The flame of a single gas burner, or that of an oil lamp giving the same light, has been found to use up as much air as six grown-up persons. Fatal accidents have been caused by the use of stoves not provided with a proper flue and good draught to carry off the air which has been made unfit for breathing by their presence. It is no use to open a window or a door occasionally when a room feels or smells "close"—a room should never be allowed to become "close." Long before this occurs the air has been gradually becoming more and more impure, and by the time the closeness is noticed it is very impure indeed. It is also a common mistake to "air" a bedroom during the day in the belief that the fresh air will last all night.

If one remains long in a shut-up room—for instance, during the whole night in an unventilated bedroom—the senses often become so blunted or stupefied that one does not notice any "closeness," although a person coming in from the fresh air would find the room quite offensive. A bedroom, and still more a sick room, should be **continuously** ventilated winter and summer, night and day. In towns the "night air" is the purest that can be had. Chill must be avoided by extra covering or by keeping up a fire, not by shutting the room up close.

In any enclosed space, such as a room, there should, therefore, be **inlets** for fresh air and **outlets** for foul air.

One finds that in most rooms, unfortunately, there are no special arrangements for ventilation, and a morbid dread of admitting cold or damp air from outside often results in windows and other inlets, not only being closed, but stuffed up with paper, sandbags, etc. Air in a room

*must* either remain unchanged (in which case it soon becomes poisonous), or else some air *must* escape from it, and other air *must* get in somehow to replace it. If the air which enters is not allowed to enter slowly by large openings, it is forced to rush in more quickly through narrow ones—so that from every chink we feel uncomfortable "draughts." It must also be understood that air which is sucked in through crevices in the walls or flooring and round the door is often by no means pure, coming as it does chiefly from the lower part of the house.

If windows are wide open they serve both as **inlets** and **outlets**, and this is the best method except in fog or very bad weather. A patient must, of course, be warmly covered, and, if necessary, a screen (which may be made of an ordinary clothes horse hung with sheets) may be put up to cut off a direct current of air.

Warm air is lighter than colder air, and so tends to rise towards the top of a room. Air which has been used in breathing or burning is at first made warm, as well as impure, and so rises; it soon, however, becomes cool again and falls, mingling with the rest of the air in the room. The *top* of the window should be opened (in the case of some windows it may be necessary to have a pane taken out). This gives the impure air a better chance of immediate escape, and any "draught" from air which comes in may be avoided by the use of a piece of wire gauze, perforated zinc, or a net curtain stretched across the opening. If there is a Venetian blind it may be slightly lowered, and the slats arranged so that the incoming air is directed upwards towards the ceiling.

Another plan is to raise the *bottom* sash of the window and fill in the space between it and the window-sill with a piece of board three inches deep; it should not be fixed.

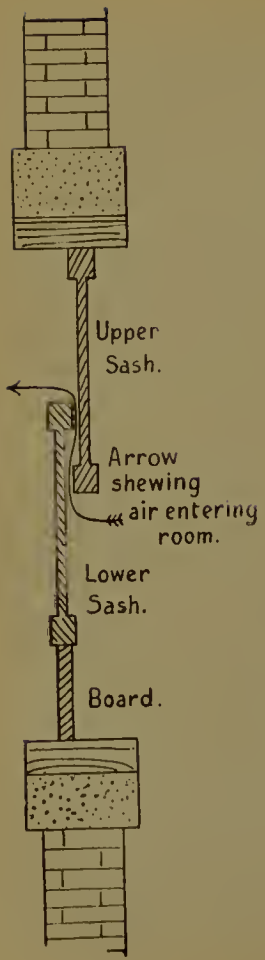



FIG. 1.

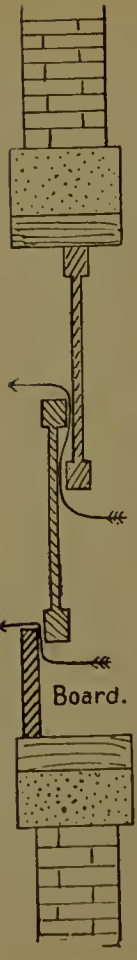



FIG. 2.

Air then enters between the two sashes. The board or a strip of flannel may be placed in front of (*i.e.* inside) the lower sash instead of *under* it.


FIG. 3.

If there be fog or smoke muslin may be arranged to filter the air as it passes into the room. This may also be done to prevent a current from an open lattice window.

When a fire is burning, air is carried from the room up the chimney, which thus acts as an

**outlet.** If this is not replaced by *pure* air from *outside* the house, it will be replaced by more or less *impure* air from *within* the house. The impure air comes in under and around the door, and through crevices in the floor and wainscot, and causes unpleasant "draughts," and if it is not sufficient the chimney will smoke from a draught coming down the chimney to make up the insufficiency.

When there is no fire the chimney should always be kept open—the plate not pulled down, and no furniture nor screen blocking up the opening of the grate. It may act as an **inlet, outlet,** or **both,** according to circumstances (the position of the room, the state of the wind, etc.), but it is sometimes of little use and should *never* be *entirely depended upon* as a means of ventilation; for this the window should always be open. A lighted lamp placed in an empty grate will help in changing the air of a room.

"Draughts" usually mean that there is too much or too little ventilation, or that this is badly managed. It is more difficult to ventilate satisfactorily a small room than a large one, because the air has to be changed more rapidly, and because it is difficult to avoid direct currents between inlets and outlets, as, for instance, between the window and the fireplace.

[It has been found that 3,000 cubic feet of air per hour for each person is the minimum amount which must be supplied to an enclosed space, such as a room, if impurity amounting to stuffiness is to be avoided. For example, if the free space in a room occupied by two persons (exclusive of that taken up by furniture) is 1,200 cubic feet, the air would require to be changed completely five times in an hour to keep the carbonic acid below ·06 per cent. This is too frequent in ordinary weather for warmth and comfort; so a larger room would be desirable.]

## CHAPTER II.

### The Nurse's Duties—*Continued.*

**Observation.**—A nurse must be watchful of her patient, but should combine this with tact, as a sick person is annoyed by being stared at constantly. By her tact and thoughtfulness she may forestall the patient's wants, so that the latter does not have to *ask* for them to be relieved. For example, a good nurse does not ask, "Is your pillow comfortable?" "Are you in pain?" etc., etc.—she can tell without asking. Many patients dislike "giving trouble" to the nurse, and will put up with pain or discomfort rather than ask to have it relieved. In severe illness, the mind is so confused that there is no feeling that attention is needed, or the effort of explaining what is wanted is too great for it to be made. Being constantly with the patient the nurse has much more opportunity of noticing the symptoms and the general condition as regards strength or weakness, hopefulness or depression, than a doctor who visits occasionally, and she is able to give him valuable information.

Notes on the following are to be kept in nurse's daily report for the doctor to see. It is better to say too much than too little :—

**The Pulse** may be counted, when a patient has been resting quietly, by feeling it in the artery at the front of the wrist above the bone of the thumb, or in the artery which runs over the temple in front of the ear. It should be taken for a minute, measured by a watch with a seconds hand; or for half a minute, the number of pulsations being,

of course, doubled when noting the rate per minute. The nurse should notice if it is irregular. The **Rate of breathing** is ascertained by counting the number of **inspirations** (shown by the rising of the chest). It is unnecessary to remove the clothes or place the hand on the chest. A good plan is to retain the finger on the wrist (as if still counting the pulse), or the rate of breathing may be altered if the patient knows it is being counted. Notice whether the breathing seems to be easy, difficult, "catchy," or accompanied by any noise, such as wheezing or grunting. After taking the pulse and respiration rate they should be at once noted.

The rate of the *pulse*, which is caused by the beat or contraction of the heart sending a wave of blood along the blood vessels (arteries), is, in a healthy adult resting quietly, about 72 a minute; in a baby six months old about 120; and in a child of four about 100.

Inspiration followed by expiration is called an act of respiration; this in a healthy adult resting quietly takes place about sixteen times every minute. A baby six months old breathes about twice as often (about thirty-two), and a child four years old half as often again (about twenty-four).

**Posture.**—Note if patient feels easier when sitting up or with the shoulders raised, if he lies on one side or always on back, if there is a tendency to slip down in bed, or to draw up the legs. Nurse should always endeavour to assist patient to maintain the easiest position. Expression of face and colour of lips should be observed.

**Pain.**—Note position of pain; the character, such as darting, "off and on," dull or aching; if relieved by pressure or movement, or by what means, and if stationary or shifting. Severity of pains—some complain loudly when not really severe, others the reverse. Notice whether it

causes flushing, pallor, sweating, or interferes with eating or sleeping, thus showing its severity.

**Sleep.**—Amount to be noted, if light or heavy, in short snatches or unbroken, if disturbed by dreams, or by talking; if on waking, patient is refreshed, or the reverse.

**Appetite.**—Amount of food taken, if enjoyed or the reverse, if difficulty in swallowing, or if followed by pain, or vomiting, etc.

**Thirst.**—Note if excessive.

**Cough.**—Usually caused by phlegm in the air tubes, which requires removal, or from an irritable condition of lining of air tubes. The nurse should notice frequency, loudness, whether accompanied by other signs, such as hoarseness, crowing or sickness—and whether dry or loose, that is, accompanied by movement of phlegm (in this case the cough is *necessary*). Young children and babies seldom spit out phlegm.

**Expectoration.**—Note if free or brought up with difficulty, if thick and tenacious, or frothy and liquid, if blood-stained or streaked. It should always be received into a cup containing disinfectant, or into rags which can be burned. Some should be kept in a spitting-cup for the doctor to see it.

**Vomiting** may be due to irritating food in the stomach, or to disease of stomach, or obstruction of bowel; it may also be caused by some irritation of the nervous system by the state of the blood or otherwise. It should be noted how often it occurs, if after food or if there has been no food taken, if pain is caused or relieved by the vomiting; any vomited matter should be kept for inspection by the doctor.

It may be treated by letting the patient swallow small pieces of ice, or iced soda water, or a small mustard plaster on the pit of the stomach may give relief.

**Urine.**—Notice if clear or thick *when passed*, if any pain or straining, or unusual frequency or quantity. If not passed for an unusually long time, or if it dribbles away, the doctor should be informed. A specimen should be kept, but not in the room, for the doctor to see. If he wishes it sent for examination, it must not be mixed with anything else, such as expectoration, and must be put into a perfectly clean bottle and well corked with a clean cork. If the amount passed in twenty-four hours is to be measured, the urine passed at a certain time, say nine o'clock, should be discarded; then all that is passed until nine o'clock next day should be collected, and added to that which the patient should be asked to pass at nine o'clock; if there is desire to relieve the bowels, the urine should first be passed separately. The whole quantity may be measured together. If there be no proper measuring glass, use something of no value, such as an empty tin, having first found out exactly how much it holds.

**Rigors** are the shiverings which occur in illness, especially those attended with fever. At first extreme cold is felt, followed by great heat and perspiration. During a rigor the patient should be well covered and a hot bottle applied to feet, and a warm drink given. The temperature should be taken every half-hour (see further). Note also how long it lasts, and whether severe enough to cause chattering of the teeth.

[**The Skin** is not only a protecting envelope for the body, but also acts as an organ of *excretion* (that is, throwing off impurities), through the sweat glands, which open on the surface of the body; these are always in action, though, except in very warm weather or when the body is heated, their working is not perceptible; they give off what is known as sweat or perspiration. There are other glands called sebaceous, which secrete a greasy

oily material, which decomposes if allowed to accumulate on the surface of the body, and so causes an unpleasant smell. Under the skin is a minute network of blood vessels, called capillaries. When we are warm, these are dilated and so contain more blood, hence a greater quantity of blood is exposed to the external air and so becomes cooled; by the loss of fluid through the perspiration, the temperature of the body is partly regulated. By the sweat and sebaceous glands waste materials also pass away.]

**Temperature.—A Clinical Thermometer** marks from 95°

Clinical Thermometer.

to 110° Fahrenheit; the degrees are shewn by *long* lines on the scale, and every degree is divided by shorter lines into five parts, so that from one *short* line to the next is a fifth (or two-tenths) of a degree. When the bulb is warmed the mercury rises in the tube, but (unlike the ordinary thermometer) the upper part (called the index) does not sink again when the bulb is taken out of the warmth, until it has been *shaken down*.

The thermometer in the print marks 102·6, "one hundred and two point six," or one hundred and two and six-tenths, of a degree.

In health, the heat of the blood remains about the same (98·4, marked by an arrow on the scale), whether the weather be hot or cold, although some part such as the skin may feel hot or cold according to the amount of blood in it. It is a trifle, *i.e.* a fraction of a degree, lower in the early morning and higher in the evening. The

temperature may be brought down by exhaustion to 96°. In *slight* fever it is raised to 100° or 101°; in *moderate* fever to about 103°; in *high* fever it may even reach 106°, but very rarely more.

The patient's feelings are not to be trusted as a guide to the temperature—in the early stage of a rigor one feels cold although the temperature is rising.

"Fever" does not always mean an *infectious fever* —merely that the temperature of the blood is raised.

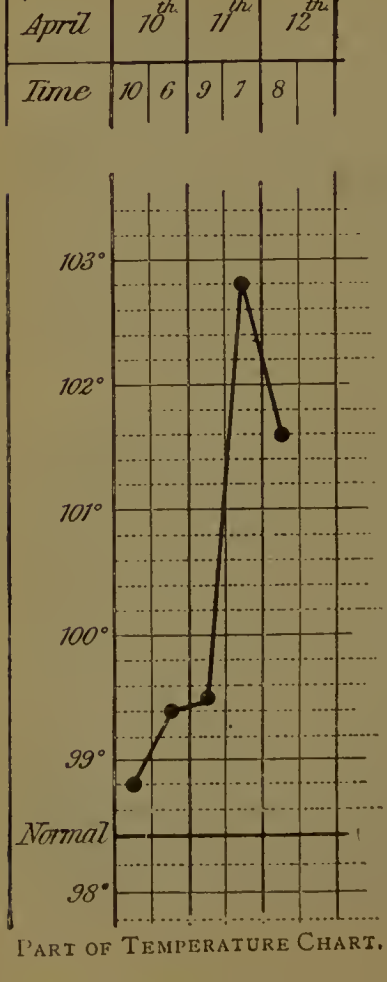
A temperature chart is ruled from bottom to top into spaces like the thermometer, and from side to side into spaces signifying periods of time. When a temperature has been taken it should be at once marked by a (•): the next temperature is put down to the right of the last in the proper space, and the two connected by a line.

[Animal heat is an accompaniment of the oxidation of products derived from the food occurring in the tissues, particularly in the muscles. This results in the output of energy.

The temperature in health is regulated to a great extent by the nervous system controlling the expansion and contraction of the blood vessels; in hot weather the blood vessels of the skin dilate, free perspiration occurs, and heat is lost by its evaporation, whilst in cold weather the reverse takes place. In consequence of the rapid circulation of the blood the temperature of all parts of the body (except the surface of the skin) is alike.

In certain diseases, in consequence of the poisoning of the blood and the disorder of all functions of the body, the balance between production and loss of heat is disturbed, and so great variations occur.]

The following portion of a chart shews that the temperature taken at 10 o'clock on the morning of 10th April was 98·8. In the evening at 6 o'clock it had risen to 99·4. The next day at 9 o'clock only one point higher (99·5), but by 7 in the




PART OF TEMPERATURE CHART.

evening it had reached 102·8, dropping by next morning to 101·6.

**To take the Temperature.**—1. See whether the top of the thread of mercury (called the *index*) is below the arrow which marks 98·4. If not, shake it down, holding the thermometer bulb downwards and giving it a jerk as if you wanted to shake off a drop of water hanging on the bulb. Do not shake it below 96°.

2. Place the bulbed end of the thermometer *under* the tongue, in the armpit, or (in babies) in the fold of the groin. When put under the tongue, nothing hot or cold should have been in the mouth for a quarter of an hour before. The lips must be firmly shut but the tube not bitten by the teeth. If there is cough, or the patient be young, put the bulb in the armpit or groin, taking care that the part is dry and has not been exposed

to the air for a quarter of an hour before, and that the arm or thigh is brought well across and kept so.

3. After leaving for two minutes if under the tongue, or five minutes if elsewhere, take it out, look at the top of the index and *at once* note the temperature.

The thermometer is read by holding it *horizontally* (as in the print), in a good light and turning it slowly on a horizontal axis, until the top of the thread of mercury can be clearly seen.

4. Disinfect thermometer if necessary (see Chap. IV.) and in any case wash it *carefully* in cold water. A clinical thermometer is very easily broken; avoid striking it against the basin.

5. Shake down the index and put the thermometer in its case.

The temperature must be taken at fixed hours as the doctor orders, also if there is any change in the patient's condition, such as a rigor. As a rule, the temperature is not to be taken more frequently than twice daily.

**Washing.**—It is important to keep patients clean, not only for their comfort and that of others, but to allow the skin to act as it should in getting rid of poisonous products which are formed in our bodies.

Generally, the face and neck should be washed at least once a day in warm water, and the face sponged and hands washed before every meal. If possible a warm bath should be given at least once a week, if not the rest of the body must be washed by degrees, one part on one day, one on another, uncovering only that which is being done, or if necessary doing it under a spare blanket without any exposure, and drying quickly

with warm bath towels. For washing on the bed, get everything ready at hand before beginning. Protect the sheets, etc. by warm dry bath towels or spare blankets. Do not put the basin on the bed. The hair should be combed and brushed daily, and if long may be conveniently plaited on each side; when doing so, protect the nightdress and bed by a sheet or large towel.*

General washing and attention to the toilet should *not* be done before the first meal of the day has been taken.

Cleaning mouth and teeth is very important in all cases of illness, the appetite and digestion are often thereby improved, whilst serious disease may result from neglectin g to do so. If the patient is able to do this everything required should be brought all together on a small tray. The teeth should be cleaned always the last thing at night, or oftener, and the mouth rinsed before and after every meal, or in case of young or helpless patients the mouth cleansed by the nurse with a clean wet rag on the end of the finger, or a soft sponge on a handle. Borax and glycerine, sanitas and water, may be used if necessary.

**Bathing :—**

| | |
|---|---|
| The tepid bath 85°—95° | Hot, 100°—105° |
| Warm, 95°—100° | Very hot, 105°—115° |

The hot and cold water in a bath must be stirred together before using the thermometer. The top of the column shows the heat. Look at it whilst in the water, as the mercury quickly runs down when taken out. If there is no thermometer the *elbow* (better than the hand) will tell if the bath is too hot. If a bath of over 100° is ordered, it should be made at first to 95° and then more hot water added a little at a time, after the patient is in it

* If possible, a patient should have two nightdresses in use—one for night and one for day.

(taking care not to scald), stirring well until the required heat is reached. The patient must be carefully watched and at once taken out if feeling faint.

Care must be taken never to expose a patient to fatigue or chill before or after a warm bath. If there is not a bath-room at hand it should be given in the room, before the fire, with a screen round. Afterwards the patient should be at once wrapped in a warmed blanket and put to bed. Drying can be done when under the blanket.

**Mustard Baths.**—Use an ounce of mustard for each gallon of water. The mustard is made into a paste in a basin, and gradually stirred into the water of the bath which should be at 100° F. Care must be taken that none of the vapour gets into the eyes, which should be kept closed.

**Sponging.**—Tepid sponging is done to relieve fever and restlessness. Arrange under the patient a piece of mackintosh covered by a blanket or large bath towel. Remove the night-clothing and cover the patient with another blanket (this may be done without exposure), then remove the bed-clothes. The skin is then slowly sponged with tepid water all over from the head to the feet, passing the sponge slowly two or three times over one part, drying it and going on to the next part, and so on, keeping the patient covered by the blanket. A little vinegar or sanitas may be added to the water.

**Packs.**—The upper sheet must be removed, and bedding must be protected by warmed bath towels or a blanket with a mackintosh under. A hot pack is used to promote perspiration, and is given by stripping the patient and wrapping him in a thin blanket wrung out of hot water and applied as hot as can be borne. It should be rolled lengthwise, thoroughly wrung out, and the blankets on

the bed should be turned up along one side and the patient turned on his side (as in changing the lower sheet), one edge of the blanket is now tucked under him and the rest unrolled round him and tucked in on the other side without exposure. Two or three other blankets should be put over and the pack renewed in half an hour, if directed. Warm drinks should be given, and hot bottles arranged round the patient whilst in the pack. The wet blanket is then removed, and the patient dried with warm towels and left lying in a dry blanket.

A cold pack is given by wringing a sheet out of tepid or cold water (as ordered) and applying as above, covering with a blanket. It should only be given under medical supervision, and is generally used to reduce a high temperature.

**Dressing.**—All clean clothing must be well warmed.

If one arm can only be moved with difficulty it should be taken *last* out of the garment taken off and put *first* into the garment that is being put on. The use of a pyjama jacket, or a nightdress opened all down the front makes changing easier in such cases, also in weakly patients; a patient who cannot sit up can be turned on the side, the uppermost arm slipped out and put into the sleeve of the clean one: the change is then completed by rolling the patient over and removing the sleeve on the other side. If two garments are worn, such as a vest and night shirt, they can both be opened all the way down, then the sleeves of one, put into the sleeves of the other, and both put on the patient together. When the back has to be often examined the nightdress may be made to open down the *back* and fastened with thin flat buttons. If the patient sits up in bed a jacket is much better than a shawl, which admits air under it, drags on the arms, and leads to upsetting of cups, etc.

**Lifting.**—In lifting a patient up in bed, the nurse should lean over, and slightly bending her knees pass her hands under the armpits, and clasp them flat on the back. The patient may rest the hands on her shoulders or clasp them round her neck. The nurse then lifts by straightening herself at the knees and hips rather than dragging with her arms. *One* nurse should not attempt this with a heavy patient. A child or very light patient may be lifted completely by passing one arm under the knees and the other round the back below the shoulders. If there are two nurses, they should stand opposite one another and clasp hands under the patient's shoulders and hips: a third helper may attend to the legs or to the head. In this way a patient may be entirely lifted off a bed and moved lengthwise, the bearers taking short side steps to a sofa or another bed. If the bed is too broad or against the wall both nurses stand on the same side, one clasping her hands below the arms under the shoulders, the other slipping her hands and forearms underneath the patient on each side of the hips. In any case one nurse must take the lead, and the others must not begin to lift until she gives the word, after having made sure that the assistants are quite ready.

## Administration of Medicines.

### Table of Measures.

| *Standard Measure.* | *Popular Measure.* |
|---|---|
| ♏i One Minim.. .. .. | 1 drop |
| ʒi One Drachm (60 Minims) | 1 Teaspoonful |
| ʒij Two Drachms .. .. | 2 Teaspoonfuls or 1 Dessertspoonful |
| ʒiv or ʒss } Four Drachms or Half a fluid ounce | 4 Teaspoonfuls or 1 Tablespoonful |
| ℥i One fluid ounce .. .. | 2 Tablespoonfuls |
| Oi One pint (℥xx) .. .. | 1 Pint |

Popular measures are very inaccurate, and if the dose of medicine is not marked on the bottle it should be measured in a medicine glass. Drops vary according to the thickness of the fluid. A teaspoon of the present time contains generally ninety minims instead of sixty, and a tablespoon three-quarters of a fluid ounce instead of a half. A sherry wine-glass or a custard-glass holds about two fluid ounces: a teacup, four to six: a breakfastcup, six to eight: and a tumbler, ten, or half-a-pint.

Medicines should be kept in a cool place, well corked, and out of the reach of children. Give the doses at the regular times, unless a patient is asleep (a medicine ordered every four hours is to be given by night as well as by day, but do not disturb unless so ordered by the doctor —give it when the patient awakes). If a dose has been omitted or put off, do not give an extra quantity nor within a shorter time to "make up." *Never* give medicine in the dark, and *always* look at the label, even if giving the same medicines several times a day. Medicines ordered three times a day without other directions may be given between meals—say at 11, 3, and 7. Cod liver oil is given after meals, and aperients either the last thing at night or early in the morning. No medicine should ever be given immediately before breakfast.

Never keep sleeping draughts with other medicines. Brandy and other alcoholic stimulants should be regarded as medicines, and the doctor asked exactly how much is to be given, and how often.

All applications intended for outward use, such as liniments, must be kept in a different place from medicines, and should be in bottles of different appearance and feel.

When a doctor is in attendance, no medicine must be given nor any treatment adopted unless ordered by him.

The nurse should never forget that the duties of a doctor and those of a nurse are distinct. It is the business of the doctor to find out as far as possible what is the matter, and to lay down a plan of treatment, whilst it is the business of the nurse loyally to carry this out and also attend continuously to the patient's welfare and comfort.

**Eye Drops** are put in with a small brush or a special dropper. The head should be thrown rather back and the eye opened, the lids steadied by the thumb and forefinger of the nurse's left hand, whilst the drop is put in *between* the lids at the *outer* corner of the eye.

**Liniments** are spirituous or oily fluids, which are sometimes painted on the skin, sometimes used for rubbing, as directed by the doctor. In the latter case, a little should be put into the palm of the warmed hand, and the affected part rubbed firmly but not so hard as to cause pain or bruising. In a limb, always rub *upwards* towards the shoulder or hip, and do not rub where the bones are just under the skin, for instance, the shin. The hand must be carefully washed afterwards.

**Lotions** are watery fluids applied on rag or lint, and used for bathing. If a cooling or evaporating lotion is used the stuff must be thin, such as linen or butter muslin, and only in a single thickness, freely exposed to the air; as it dries, more lotion must be sprinkled on it, or a second piece of lint may be kept soaking, ready for changing without delay.

Lotion can be best applied to the eyes by an eyecup (sold at the chemist's); a small wineglass or an eggcup may be used instead. Some lotion is put in the cup, the edge fitted round the eye, and the head thrown back so that the lotion runs over the eye, which should be opened. If the eyes are to be merely bathed, some lotion should be poured

into a perfectly clean saucer, and after the hands are thoroughly washed small pieces of clean rag (not a sponge) used for bathing. The rag must not be used a second time unless it has been boiled.

**Powders** for the skin may be dusted on with a piece of cotton wool if there is no powder-puff.

**Plasters.**—The skin must be washed and dried, any paper or muslin which covers the sticky side of the plaster taken off, the plaster warmed and spread on evenly, nicking or cutting it when necessary to avoid creases. Plaster may be warmed by holding it to the fire, or by holding it by its edges with the *plain* side against a jug or tin full of hot water. It can be removed by hot water, and in case of any rubber or adhesive plaster ("strapping") still sticking, it may be cleaned off with oil. If it has been applied to a wound the ends should be lifted and the plaster drawn off towards the middle, so that the wound is not torn open.

**Ointments** are spread on soft linen, or rubbed in, as may be directed.

**Ice** should be kept wrapped in flannel or in sawdust in the coolest place in the house. It can be split by stabbing with any sharp pointed instrument such as a bradawl.

For outward use, it is broken up and put in an icebag (a spongebag will do), which should be covered with flannel to keep it dry.

If applied to the head the bag should be fastened to the pillow by a safety pin or slung to the bedstead, so that its weight does not rest on the head. It is useful in cases of high fever, headache, etc.

**The Steam Kettle** may be ordered in bronchitis or croup cases. If one is not at hand, a length of rubber tubing, or even a roll of brown paper, may be fitted on the spout of an ordinary kettle, or any tin-smith will make a

long tube with a wide, flat mouth, to conduct the steam into the room. The water must be kept boiling night and day. When filling up do not put in cold, but use water already boiling. See that vapour of the steam from the kettle does not fall on the bed, and so wet it. Inhalations, plain or medicated, are sometimes ordered in throat and chest diseases. An **inhaler** may be improvised by taking a wide-mouthed quart jug, three parts filled with boiling water, which may contain some pine oil, or whatever the doctor directs. Round the mouth of the jug a towel is rolled, and the patient then places his nose and mouth over the opening of the jug, the cheeks, etc., resting on the towel, and breathes in the steam.

A **Linseed Poultice,** to be of any service, must be really hot. Brown paper or flannel should be cut an inch or more all round larger than the poultice required, and of the same shape. The water must be boiling, the basin, spoon or knife, and brown paper or flannel warmed before the poultice is made. It must be quickly but thoroughly mixed to avoid lumps, neither too stiff nor too sloppy, and neatly spread so that it is of the same thickness (about half-an-inch) throughout, leaving an edge of paper or flannel an inch broad, which should be turned over. Test the heat by touching it with the cheek or back of the hand, and quickly smear over it a little oil. If "crushed linseed" has been used the oil is not necessary. The boiling water may be (1) added to the linseed whilst stirring, or (2) a poultice may be more evenly mixed by pouring into a heated basin boiling water to the quantity required (which can be judged by a little practice), and gradually adding the linseed to the water, stirring all the time, instead of adding the water to the meal. If a poultice has to be renewed, do not take off the old one before making the

fresh one, but carry the latter to the bed between two hot plates and change quickly. Poultices should never be applied to open wounds or sores. When made it should be lowered on to the skin gradually, and kept in place by a warm thick handkerchief or flannel. If applied to the side, take it in the hand, and put it on lower edge first. In taking off remove the upper edge first, so that it falls into the hand and not on to the bed. A poultice should be changed every two hours, unless the patient is sleeping or is not to be disturbed.

**Mustard Poultices** are made with warm, not boiling, water, and spread on rag or brown paper, with the edges turned over. A piece of tissue paper or fine muslin must cover the mustard, so that it does not touch the skin. Keep on until the skin is red (this will be ten to twenty minutes, according to its sensitiveness), and apply a soft handkerchief or cotton wool. For a child, half flour and half mustard may be used, well mixed ; for a baby, four times as much linseed as mustard, well mixed before adding the water.

**Bread Poultice.**—Cut a piece of flannel or soft rag an inch larger all round than the intended size of the poultice. Crumble some stale bread. Pour boiling water into a warmed basin, sprinkle in the crumbs, stirring until thick ; cover and put in a warm place for five minutes ; turn out on the flannel, and spread evenly with a knife dipped into hot water, and turn up the hem. Smear a little oil over the surface.

**Fomentations** are lighter than poultices : they must also be hot. Take a piece of house-flannel twice the size required, fold once, make the flannel into a small roll, and put into the centre of a towel, twisting up the two ends of the towel ; place in a saucepan of boiling water, with the ends of towel hanging out ; leave for a couple of minutes,

then take out and thoroughly wring the water out, as if washing; convey to patient rapidly, unroll and shake it, test the heat, apply flannel to the part affected, and cover with some waterproof material (oiled silk or mackintosh), or, if none at hand, with a dry flannel or towel, and cotton wool over it. They require changing every quarter of an hour, as they soon lose heat. Have another one ready to put on as the last is taken off. A *roller* towel may be used and a stout stick put into each end. The flannel is well wrung by two people twisting in contrary directions.

A *boric fomentation* is applied to wounds, boils, etc., in preference to a poultice. Boric lint, cut and folded in four layers, is wrung out of boiling water and covered with a piece of oiled silk, which should reach half an inch or more beyond the edges of the lint. Cotton wool is then applied over this to keep in the heat, and the whole kept in place by a bandage. It should be changed every hour.

Dry heat may be applied in the form of a flannel heated in an oven or before the fire, or by means of salt, or bran, or camomile flowers, put in bags and heated in the oven, or heated in a pan over the fire, and poured into the bags; a flat tile can be heated in the same way and wrapped in flannel. It is also used in the form of a hot water bottle. In the application of dry heat to a patient care must always be taken to have a good thickness of flannel between the heating agent and skin of patient, especially in cases of babies, paralysis and where there is want of sensation from unconsciousness, as serious injury may otherwise be caused.

[A blister is sometimes ordered, generally a mustard leaf, or it may be a liquid paint, or in form of ointment. When a bladder has formed, the blister should be removed, the skin cut where it hangs down, the fluid allowed to drain into cotton wool, and a little vaseline or zinc ointment, spread on a clean piece of linen, applied to the part.

Leeches are occasionally ordered ; they are used to remove blood. When applying, a part of the skin over a bone should be chosen, but not where there is a vein seen on the surface ; the skin must first be washed, and then well washed with clean water to remove all traces of soap. The leech must be taken up in a corner of a handkerchief, or put into a little box, and turned upside down on the skin ; a drop of cream, sugared water, or blood from a pricked finger will induce it to bite if sluggish. When a leech has abstracted as much blood as it can, it will probably drop off ; if it does not, a pinch of salt on its body will generally cause it to do so. It must never be pulled off. A small compress of clean linen should then be bandaged tightly on the leech bite, unless the doctor wishes the blood to be allowed to flow.]

**A Simple Enema** (plural, enemata) consists of warm (99°) soap and water, or thin gruel (free from lumps and solid particles), injected into the lower bowel to produce an action. Inject very slowly, the patient lying with knees drawn up, on the back, or left side, with a pillow under the hips, near the edge of the bed, which should be protected by a cloth or draw-sheet and waterproof. Injection is done (*a*) with a " Higginson's " syringe ; the fluid is placed in a basin, and the syringe must be filled with it before inserting the nozzle, so that no air is injected ; or (*b*) with a douche apparatus. The tank must not be raised more than 2½ feet above the level of the bed, and the tubing must be filled with fluid, and a little allowed to run out at the nozzle before inserting the latter. The nozzle should, in either case, be oiled before putting it into the back passage. At least a pint of fluid should be prepared for an adult, but an ounce may be enough for a baby. If there is complaint of pain, or straining, the injection must be stopped by ceasing to squeeze the ball of the syringe, or by pinching the tube of the douche, until the discomfort is over

The patient should be encouraged to hold the fluid as long as possible. A commode or bed-pan must be in readiness. Sometimes oil is ordered to be added; if so it should be warmed, and either injected first, with a separate glass syringe, or mixed with a small quantity of the fluid—if added to the bulk of the fluid it floats, and so comes to be injected last. If a glass syringe is used, turn it upside down and expel all air before inserting the nozzle. When oil is used with a Higginson's syringe it should be well washed after use, as oil injures rubber.*

**Suppositories** are little cones which are pushed well into the lower bowel by the little finger, which should be well oiled.

## Tuberculosis (Consumption).

**The Seed.**—*Consumption* is a disease caused by a living organism (only visible when very highly magnified), called the Tubercle Bacillus. This grows and multiplies like a fungus or mould in the body, setting up inflammation, by which the diseased part is destroyed, the disease being called tuberculosis. When the lungs are invaded the disease is commonly known as phthisis or consumption. The same organism may cause tuberculosis or inflammation of the brain and its coverings (meningitis), tuberculous disease of the spine or of joints (such as the hip), and of many other parts of the body. When attacking the glands of the neck the disease used to be called "scrofula." It must be noted that "consumption of the bowels" is often said to occur in babies; usually, however, this is not true consumption, but only a disturbance caused by improper feeding.

* Patients should be carefully but not obtrusively watched during and after giving an enema, and in any case when action of the bowels is difficult and painful, as faintness may occur.

Many of the lower animals, especially cows, are liable to tuberculous disease caused by bacilli.

The bacilli reach the outer world again chiefly in the sputum (or spit) and other discharges of consumptives. When the sputum dries and becomes dust, these seeds of disease remain alive and are blown about in the air by the wind, or scattered by sweeping or shaking anything such as a carpet or handkerchief which has been soiled by a consumptive, and are then breathed in by other people. The germs may also enter the body by means of milk from diseased cows, or any food which has been exposed to dust and dirt. It is therefore safer to sterilize milk, especially in towns (see later on).

**The Soil.**—When the seeds of consumption are swallowed or inhaled they do not always grow, because, like all seeds, they can only grow in ground or soil which suits them, and this is provided by a person who is out of health or weakly, but not by one who is in a sound state of health. If the health has been lowered by want of proper food and clothing, or by previous illness (such as whooping-cough), or by drunkenness or other bad habits, or by breathing impure air, the danger is increased.

**Avoidance.**—To avoid it, food should be plain and wholesome and taken at regular hours; rooms dry, well lighted and always airy. Any clothing that interferes with the movements of breathing, such as tight stays or belts, must be avoided. The underclothing should be of flannel or some such material. The skin must be kept in good order by washing and rubbing. A stooping position at work must be avoided, and if possible an occupation selected which does not oblige the holder to keep in a stuffy room. Exercises such as rowing, cycling and walking are excellent when not carried to over-fatigue. If these cannot

be had, the exercises taught in the schools should be kept up at home, especially deep breathing, always with the windows open and the clothes loosened, at least a few minutes *every day*. Late hours, excessive smoking, or drinking of beer, spirits or tea, living in dirty and overcrowded neighbourhoods, exposure to wet and chill when unsuitably clad, neglect of "colds," and other disorders (which may seem trifling), and all kinds of anxiety and over-excitement are injurious, and should be especially avoided by those whose relatives have suffered from consumption.

The children of consumptives do not directly inherit the complaint, but they commonly inherit a weakly constitution, which may, however, be strengthened and enabled to resist the disease by proper attention to the laws of health.*

Dampness and darkness, either of localities or houses, render people liable to consumption, by lowering the general health; whilst fresh air, sunlight, and a dry, well-drained soil have the opposite effect.

**Prevention and Nursing.**—Consumption is, therefore, an infectious disease, but with care the risk of infection is very much reduced. As it is mainly spread by the germs contained in phlegm or expectoration which the patients spit up, this should be received in spitting cups or rags, and quickly destroyed, if possible, by burning. Cups are made which can be carried about by those able to go out. It is a good plan to have sawdust, or still better a paper lining, in the cup, so that its contents may be thrown straight into the fire and the cup put into boiling water, which will kill the bacilli in any phlegm smeared on the edge. One may instead add a strong disinfectant (which may be

* For fuller details see "Tendencies to Consumption; How to Counteract them." London: The Scientific Press Ltd. 2/6.

obtained free of cost from the Sanitary Inspector) to the contents of the cup, and after leaving it for an hour pour it all down the w.c.; but this is not so sure a method as burning. The expectoration must on no account be thrown on to dust-heaps or into ash-bins, even after it has been in contact with a disinfectant. As the germs may also be present in the spray coughed out, no person should sleep with a consumptive. When it is impossible for a consumptive to have a bedroom alone, the other person's bed should be placed as far away as possible, and so that the air breathed by the consumptive is not carried over it. Great care should be taken to avoid stirring up the dust in a consumptive's room, as such dust is apt to contain the bacilli; floors, furniture, etc. should be wiped with a damp cloth, not brushed or "dusted," and the cloths afterwards burnt or boiled, and everything should, as far as possible, be washable and have a smooth surface. They should have their own spoons, cups, etc., which should not be washed with those used by other people, and should be put in *boiling* water when possible. Children ought not to be much with consumptives, and a consumptive mother should not suckle her child. Kissing of and by consumptives is best avoided, and men should shave off their moustaches. Any bed-linen or other article soiled, or likely to have been soiled, by the spit or other discharges, should be boiled or soaked in strong disinfectant, particularly before "sending to the wash," if this is done.

Abundance of fresh air and sunlight are preventive and curative; the windows should be kept wide open, the patient being, of course, suitably clothed.

After a room has been occupied by a consumptive it is wise to have it thoroughly disinfected, which will be done in many places by the Sanitary Authorities.

Consumptives should carefully wash their hands frequently, and should never swallow any expectoration, as by so doing the bowels may become affected. The nurse should avoid inhaling the patient's breath, and should wash her hands very carefully after touching anything that may have been soiled.

It is the duty of the nurse to see that the above rules are obeyed.

**In Nursing a Patient suffering from any Disease of the Respiratory Organs** (bronchitis, etc.) the following points require special attention :—

The room should be kept at an even temperature, 60°-65°, but well ventilated.

Plenty of warm drinks should be allowed; if there is much fever cold drinks may be given frequently, a little at a time, or ice sucked.

Breathing is easier if the head and shoulders are raised by pillows. When one side of the chest is affected, the patient generally prefers to lie with the sound side uppermost.

A spitting cup should be provided as described.

The doctor's advice should be taken in regard to the steam kettle and poultices, which are chiefly used in the early stages, for relief of hard cough or pain. The weight of poultices and the swathing necessary to keep them in place interfere with the movements of breathing, and many doctors object to them on these and other grounds, especially for infants and small children. A cotton wool jacket may be made by quilting a sheet of cotton-wool on the inside of an under-garment, or on a piece of soft muslin, cut in the shape of a waistcoat, slightly larger than is needed to cover the chest and back.

If the chest is rubbed with oil or liniment, when doing so,

slow and rather firm pressure should be made, drawing the palm of the hand from the middle of the back round to the front over the lower ribs, and repeating several times, always starting at the back.

In case of **Hæmorrhage,** either from the lungs, "blood-spitting," or stomach, the patient must be kept absolutely quiet and should talk and move as little as possible ; all clothing must be loosened. Those about him should try to avoid appearing alarmed or excited. In most cases there is no immediate danger. No stimulants, such as brandy, tea, coffee, nor any warm drinks should be given. Hot water bottles should be put to the feet. If there is faintness, the head should be lowered. The room must not be hot and fresh air must be freely admitted. Internal hæmorrhage may occur without either coughing or vomiting of blood. There is increasing pallor, weakness of the pulse, feeling of coldness and dizziness, dimness of the sight, and restlessness.

In cases of **Heart Disease,** fatigue and all sudden movements should be avoided, especially suddenly rising or sitting up in bed, also sudden noises, and everything which may cause alarm or excitement.

Patients with Heart Disease are often, from the nature of their disorder, inclined to be irritable, and tact is needed in dealing with them.

A bed rest is usually required, as they are easier in a sitting position. Sometimes sleep is better obtained when sitting up in an arm-chair.

The diet needs very careful attention. No great quantity of either solids or liquids must be taken at a time, the bowels must be kept moderately relaxed to avoid straining.

In case of **Fainting,** the patient should be put lying down with the head low and the foot of the bed raised on

books or blocks. Clothing about the neck, chest and waist must be loosened, fresh air freely admitted, and the cheeks and lips rubbed briskly. A hot sponge or cloth may be applied over the heart. If the patient is able to swallow, a little *hot* coffee or tea, or a teaspoonful of sal volatile in a wineglassful of cold water can be given with a spoon or feeder, but *not* if there is any possibility of the fainting being due to loss of blood.

In the event of a **Fit or Convulsion** occurring in the course of an illness the patient should *not* be "held down," but pillows should be arranged, so that he does not strike the head or limbs against the bedstead or wall. A pencil or piece of wood with a thin end should be pushed between the back teeth, hooking back the corner of the mouth, and held there to prevent the tongue being bitten. Clothing must be loosened, fresh air admitted, and a hot bottle applied to the feet. If there is flushing of the face the head should be raised and cold applications made to the head. Difficult or noisy breathing may often be relieved by turning the upper part of the body and head to one side and putting a pillow under the opposite shoulder. The nurse should notice where the twitching begins and how far it extends—whether only of one side of the face, or one arm, or all over the body—also the direction in which the head and eyes are turned during the attack.

In all such emergencies the doctor must, of course, be sent for at once; especially if there be a sudden rise of temperature, or a sudden fall, with pallor and faintness.

**Restlessness** may be due to, or increased by, many causes—thirst, discomfort in bed, want of attention to the ventilation of the room, and in case of infants and delirious persons, by anything attracting the patient's attention, such as the flickering of shadows on the ceiling, a picture or

suit of clothes hanging on the wall opposite him, a flapping blind, etc., etc., and the nurse should see there is nothing of the kind which can be prevented. The room must be kept quiet, without any bright light. If there is in delirium incessant half-conscious talking and asking of questions, the nurse should occasionally say a few words in a quiet reassuring tone, neither keeping entirely silent, nor encouraging talk by replying too often, and never irritating by contradiction. The face should be sponged and drink offered at intervals. A delirious patient should never be left, and in case of anyone whose delirium tends to become violent or suicidal, there should be assistance within call. It is well to secure the windows in such cases by screws, so that they can be opened only a few inches, especially if the patient is not on a ground floor, and to remove all knives, razors, fireirons, crockery and anything that may be used for purposes of injury.

**Excessive Sweating** should be dealt with by wiping with dry flannels and a change of clothing, which should be of a woollen material. Avoid exposure to a current of cold air but do not let the room be overheated.

**Operations and Surgical Cases.**—Where there is any immediate probability of an operation being required, the nurse should get ready before the surgeon arrives—basins, slop-pails, soap, towels, plenty of hot and cold water, and one or two small steady tables. If there is notice of an operation, the surgeon should be asked what is required besides the above. The bowels should be well opened as directed by the doctor. The coverings must be so arranged that the patient is kept thoroughly warm, but at the same time the part to be operated upon can be freely exposed ; for example, in an operation on the abdomen he should have on a warm vest and stockings, and shawls or small blankets should be ready to put over the chest and thighs. A piece

of oilcloth, or several thicknesses of newspaper should be put under and around the operating table or bed.

If an anæsthetic is to be given, the directions given by the doctor in regard to withholding all food and drink, including milk, for some hours before, must be strictly obeyed, or dangerous vomiting will occur. The anæsthetist may require false teeth to be removed and should always be told if there are any. After an anæsthetic (such as chloroform) has been given for an operation, the patient should be allowed to sleep as long as possible, but not left alone for a moment. The room should be quiet, darkened, and well-ventilated, but draught carefully avoided. Sickness is apt to occur, and the head and upper part of the body should be turned on one side, but the head should not be raised. The mouth may be rinsed, but nothing should be swallowed for four hours, or longer if there is still retching and disinclination for nourishment. A cup of tea with plenty of milk, some milk and soda water, or beef-tea may then be given, a little at a time, unless the surgeon has directed otherwise. If there is continued sickness a drink (five ounces) of *hot* water should be given, or a cup of hot coffee without milk or sugar. The taste left by ether may be treated by giving thin slices of lemon to suck.

If the patient becomes gradually or suddenly cold and pale, the head must be kept low, taking away the pillow, the foot of the bed raised on blocks or books, hot water bottles applied, and surgeon sent for at once. He must also be sent for, if there is continued and excessive pain or vomiting, difficulty in breathing, or any other condition which appears dangerous.

**In Surgical Cases** no dressings or splints should be disturbed unless directed by the surgeon, but he should be at once informed if there is numbness, severe pain, bleed-

ing, rise of temperature, or a shivering fit. When splints have been applied, any coldness or blueness of the fingers or toes should be immediately reported. The nurse should, without moving a wounded part, look occasionally as far *under* it as possible, to see whether any blood or discharge has come through the dressings. If a dressing has thus, or in any way, become damp or soiled, it should not be left exposed to the air, but (if not changed) be at once well powdered with boric acid or other antiseptic, and covered by a thick layer of clean cotton wool. If a nurse has to change a dressing, she must get everything ready beforehand, so that there is no delay when once started, and thoroughly wash and disinfect her hands and all basins, etc., before beginning.

Use no sponges or flannels, but clean *absorbent* cotton wool. If a dressing has stuck to a wound it should be thoroughly soaked with a warm antiseptic lotion, and removed carefully from the edges towards the centre. The lotion which drains away should run into a separate dish, not into that containing the clean lotion. Avoid touching a soiled dressing with the fingers—it should be taken up by forceps or scissors, which should afterwards be boiled or otherwise disinfected. Erysipelas, blood-poisoning, and other disorders of wounds are caused by certain living organisms of microscopic size being conveyed to them by fingers, instruments, etc., and it is important not only to practise strict cleanliness, but also to kill the organisms by heat or disinfectants, and to protect even trivial wounds from dust and the contact of clothing.

Soiled dressings and bandages must be burnt.

## CHAPTER III.

### Digestion. Food and Feeding. Convalescence.

**Digestion** is the conversion of food into a fluid state, thus rendering it capable of absorption. It is carried out in the stomach and in the intestines ; no benefit is derived from food which has been swallowed until digestion has taken place. Many foods which are wholesome to adults are indigestible for young children, and may produce vomiting and diarrhœa ; so also with sick persons, who require a special sick diet.

In fever there is disturbance of digestion and much tissue waste along with the excessive heat ; thus it is that sick persons lose flesh. To counteract this waste special food is wanted in such a form that it can be readily digested.

The instructions of the doctor as to diet should be rigidly followed ; lives have been lost through humouring a patient's wishes in giving food not allowed by the doctor : especially is this so in Typhoid (or Enteric) fever, or in Ulceration of the Stomach, Peritonitis or other abdominal diseases.

**Kinds of Food.**—Most food substances are of a complex nature, and contain several elements of food. To understand the digestion of food, we can best divide it into the following groups :—

(1) Water—a necessity—found largely in all solid foods.
(2) Sugars and Salts are readily absorbed without being altered.

(3) Starches, such as Arrowroot, are converted into Sugar.

(4) Fats—such as Fat, Butter, Oil, etc.—are partly converted into a soapy solution. This process is called saponification.

(5) Proteids (or Albumens), such as Fish, the Lean of Meat, White of Egg, are converted into a "Peptone," the chief characteristic of which is the ease with which it is absorbed.

The process of digestion of Food occurs as follows:—

(1) In the mouth, food is masticated or broken up, and mixed with the spittle or saliva; this changes some of the starch into sugar.

(2) In the stomach, the gastric juice reduces the proteids, such as meat, and white of eggs, to peptones; it also breaks up the globules of fat—*i.e.*, butter, cream, etc., by dissolving their coverings.

(3) In the first part of the bowel, the bile converts the fats into a soapy solution.

(4) Further on, the pancreatic and intestinal juices convert the remaining starches into sugar, and the remaining proteids into peptones.

The nutriment is now in a fluid state capable of absorption. The débris or waste passes on to the lower bowel.

The most common causes of indigestion are failure to masticate the food properly, taking food too quickly or too hot, or too many different things together, the use of stewed tea, eating tough or too "rich" foods, irregularity in meal-times, and wearing tight belts or stays.

In our daily life we require in certain proportions:—

1. Water, which dilutes the other constituents, aids absorption, and replaces that which is thrown off or excreted from the body, carrying with it impurities.

2. Salts and mineral matters, which are required for the repair of tissues and the chemical processes that go on.

3. (*a*) Fats.

(*b*) Sugars, starches (farinaceous foods). These are non-nitrogenous materials, and used up in the production of heat, nervous and muscular force. They may be compared to the coal burnt in the work of an engine.

4. Proteids or nitrogenous materials are tissue formers, that is, are used in repairing the constant wear and tear of our bodies.

Common articles of diet contain, as a rule, all these elements, but in various proportion—thus a slice of meat contains much water, a good deal of proteid, more or less fat, and salts; bread consists chiefly of water and starch with some proteid, a very little fat, and salts. The tissue formers, when not required for repair, are used up for the production of energy, just as the others.

Milk is a perfect food for infants, as it contains all these constituents in the right proportions. It is also a most suitable food for those seriously ill, requires no mastication, is easily swallowed and digested without much effort, requires little preparation, can be given in many different ways, and contains all the necessary constituents for the preservation of life. The amount of water which it contains quenches thirst and washes out impurities. Care must, however, be taken not to give it in excessive amount—it is to be considered a *food*, not a drink. When milk is spoken of fresh milk is meant, though a good brand of condensed milk, preferably unsweetened, may occasionally be of service *for short periods*, especially during hot weather, but should *not* be used alone *for any length of time*.

To prepare Condensed Milk: Every teaspoonful of con-

densed milk should be dissolved in three times the quantity of boiling water, and one teaspoonful of cream should be added. It is then about equal to cow's milk, and before use should in infant feeding be diluted according to age with barley water, etc., as directed for cow's milk.

One disadvantage of the use of fresh milk is that it forms an excellent soil for the growth of disease germs, and is readily infected by them. It has been satisfactorily proved in a large number of cases to act as the carrier of infection of scarlet fever, enteric or typhoid, cholera, and diphtheria. Consumption is also conveyed by milk. In this case the milk is from a cow suffering from consumption or, as it is called, Tuberculosis. The risk of being infected by disease-laden milk is prevented by heating the milk in the following way. Place some milk in a covered jug, or jar, or clean bottle in a saucepan of boiling water on the fire for twenty minutes, then place the covered vessel in cold water until the milk is cold. Afterwards it must be kept covered in a cool place if not used immediately.

[**Pasteurization** consists in keeping milk at a temperature of 70°C. (158°F.) for twenty minutes. This will kill most disease germs, but possibly not all, and will *not* kill the bacteria, which turn the milk sour, so that the milk will not keep more than a few days. To *sterilize* milk, that is to destroy all germs and also those which cause it to turn sour, it has to be heated in a special apparatus *above* boiling point (110°C.) and kept at that point for some time. This process, however, alters its taste, makes it less digestible, and lowers its value as a food.

The method described, by which the milk is kept at a temperature not far from boiling, is a good one for practical purposes.

The milk may also be brought to the boil for a few minutes in an ordinary milk or double saucepan; it should be rapidly cooled after removed from the fire.]

Milk always clots in the stomach by the action of the gastric juice. The clot formed by human milk is easily broken down by the human stomach, but the clot of cows' milk is firm and not friable. It can be made more digestible by boiling the milk and diluting it with barley water, soda water, or lime water.

The danger of the continued use of preserved foods is that in the process they have to go through in their preparation certain of the necessary constituents are altered, or disappear, so that their value as food is lessened, and in some cases preservatives are added which virtually act as poisons.

The best preserved foods are expensive, and the cheap ones are apt to be made of unsound and even putrid material worked up with strong flavourings. Many trade articles are not what they are supposed to be. For instance, "custard powders" are chiefly composed of starch, and are certainly not true substitutes for eggs as a food. We must not be misled by advertisements and posters in regard to the real value of so-called "concentrated foods." It is also a common mistake to suppose that very expensive articles of food, such as turtle soup, Bermuda arrowroot are more nourishing than cheaper ones.

Invalid diets should be very different to that of healthy persons, only light easily-digested foods being employed; a common error is to over-feed. The doctor's directions as to diet must be strictly observed, and the patient not allowed to have "just what he fancies," although if a patient *asks* for anything it should be procured, if not against directions. When there is loss of appetite it will not be improved by the patient being consulted as to his food or told what is coming. If something is brought unexpectedly it is much more likely to be taken.

Solid food in severe illnesses is almost always undigested, and is worse than useless. It is wrongly thought that wines and spirits must "strengthen" a patient. Alcohol is not a food, it is a stimulant, and must only be given by order of the doctor.

In sickness, only prepare the amount of food likely to be required, each time; do not offer excess of food, it will most likely disgust the patient. If only part is taken, it should be put on a clean plate or into a clean glass if offered again later on. Invalid's food should be varied as much as possible within the limits allowed. Food should not be brought to the patient so hot that it cannot be taken, nor when the patient is not immediately ready for it, and everything necessary should be brought all together, so that the patient may begin at once. A patient should never be obtrusively watched whilst eating. Food should not be allowed to remain in the sick room, nor any cooking done in the same room. Finally, let all food be served punctually and in a cleanly appetising way—a stained tray cloth, a slopped saucer or a dirty spoon may quite spoil the appetite of an invalid.

**Cooking and Preparing Food.**—Cooking is intended to make food more easy to digest. A good nurse should also be a good cook. Even if she does not have to prepare the food herself she should know how it ought to be done, and how it ought to look and taste when it is done. Bad cooking sometimes makes it quite indigestible; for instance, too much boiling or roasting hardens the albumen of meat (as it does that of an egg) and renders it indigestible. The proper method is to expose it first of all to great heat (that is, put it into boiling water or close to a clear fire) for about five minutes, and then to cool down the water, or move further from the fire for the rest of the time. By so

doing a casing is formed which keeps in the juices. Baked and fried meats are generally difficult of digestion. Roast and grilled meats are easily digested if not overdone. Meats cooked up a second time are generally indigestible. Boiling arrowroot in milk breaks up its granules, and thus makes it more easily digested.

Hard-boiled eggs are indigestible; a raw egg beaten up in milk is easily digested; buttered or scrambled eggs are also a good food, and poached eggs are more digestible than fried. Jellies, such as calf's-foot jelly, beef tea, and the meat extracts of commerce are only useful as appetizers and stimulants of gastric secretion; they are of very little value as foods. Potatoes should be steamed or cooked in their skins. If peeled and soaked before boiling valuable nutrients and salts are lost by being dissolved out. (See Appendix for recipes.)

**Alcohol.**—Persons brought up from childhood without alcohol find they do not "need" or desire it. The so-called "need" is generally the result of habit. Habitual drinkers get on very well without it on military campaigns, or in prison. A craving for alcohol is common in nervous constitutions, and the use of alcohol is most dangerous in these cases; it frequently ends in abuse. Much harm is done by advertised medicated wines in this way. Never give spirits or wines as a remedy without medical orders; sal volatile, well diluted, is safer. Alcohol is always hurtful on an empty stomach, and is always injurious in the morning (except *occasionally* when ordered by the doctor).

Tea should never be allowed to stand on the leaves and stew to become "strong"; it thereby becomes strong in *tannin*, which disorders the digestion; strong tea and coffee taken in excess also cause much disorder of the heart and

nerves. Tea should never be taken with meat or any food of a similar kind.

Ice may be required to relieve the parched mouth in fevers, the patient sucking small pieces. Do not, however, allow *incessant* sucking of ice, which disturbs digestion ; and do not let a delirious patient or a baby have it unless it is twisted in the corner of a piece of muslin or a handkerchief held by the nurse. If the patient is ordered ice to suck, tie a piece of muslin or flannel over a small basin or jam-pot. Place small pieces of ice on the muslin, the water then drains off into the basin.

In raising a patient to drink, pass the hand under the pillow, so supporting the patient's head and shoulders; if the quantity of liquid allowed is limited, only give a measured amount each time. Liquids may be given to patients without lifting the head by means of a feeding cup. A serviette or handkerchief should be placed under the chin. Do not have the cup more than about half-full, and be careful to tilt it slowly, and pause now and then to allow the patient to swallow and breathe. If the mouth is sore, fit a bit of rubber tubing to the spout. Rinse the feeding-cup at once after use, and draw a strip of wet rag or skein of wool through the spout to clean it.

An extemporised feeding cup is a small teapot.

**Nutrient Enemata** are sometimes required in cases where food cannot be given by the mouth. It is most important that the lower bowel should be clear, and an ordinary simple enema should be given some hours beforehand and repeated daily. A nutrient enema is given with a special soft tube, fitted to a glass syringe or funnel. Use a syringe if the fluid be thick ; it must be freed from air, and the piston pressed very slowly. If a funnel is used, it must be raised only slightly, just enough to make the fluid run.

The fluid must be at body temperature and not more than two ounces, gradually increased (if borne) to eight ounces—less for a child. The patient should lie quiet for an hour afterwards. They are generally made with milk, eggs, and a little salt and given every six or eight hours, but the doctor will give directions on these points.

**Convalescence** generally requires much tact on the part of the nurse; the body requires building up again, but the digestive system being weak, care must be taken not to overstrain it, therefore food must be carefully selected. Milk puddings, eggs, soups with barley, macaroni, rice, etc., gruel, and later on white fish, poultry and tender meat. Over-exertion and over-excitement must be carefully avoided—such is especially apt to occur when children are taken to the seaside. Clothing must be warm, chill being one of the greatest dangers in convalescence. Sleep during day as well as night is advisable. Certain diseases have special danger during convalescence, for example, after scarlet fever there is great risk from chill; after typhoid there is craving for solid food, which must be strenuously resisted by nurse, as if given it may cause death; and if anyone suffering from rheumatic fever exerts himself too much it may lead to heart strain.

The first day or so of sitting up out of bed the patient should be clothed in loose garments with a blanket or rug over the legs and feet, and should go to bed, or lie down on the outside of it or on a couch, *before* much fatigue is felt. "Dressing" and "undressing" is a tiring process. When going out for the first time a day must be chosen when there is no cold wind, and it must be remembered that a convalescent cannot walk fast to keep warm, nor bear the weight of extra clothing on cold days if walking.

Charts can be obtained which are ruled in six columns,

the first being the hours from 1 a.m. to 12 a.m. ; the second, for recording the amount of sleep ; the third, times of giving medicine ; fourth, when kidneys and bowels act ; fifth, kind and quantity of food taken ; sixth, for doctor's orders or nurse's notes. A sheet of notepaper can be divided up in a similar way. In cases of severe or prolonged illness, both temperature and report charts should be kept.

## CHAPTER IV.

### Infection and Disinfection.

**Infectious diseases** are due to germs or microbes, which are small living organisms, only seen by the highest powers of the microscope. *Infection* means communicating a disease from one person to another. Each disease has its own special germ which reproduces the disease and nothing else—*e.g.* typhoid bacillus produces typhoid and nothing else. Each reproduces its own kind, generally by dividing in half again and again, and thus producing new organisms. This division, or multiplication, goes on very rapidly so that one fever germ may produce 17,000,000 of its kind in twenty-four hours. Fever, rash, etc. result from the growth of these organisms in the blood and tissues of the body. These seeds of disease are then thrown off in the excretions and infect other people directly, or they may be carried by air, water, clothes, flies, cats or dogs, and so may be breathed in or swallowed by people at a distance.

Among the diseases which may be conveyed by *milk* are diphtheria, typhoid fever, tuberculosis, and scarlet fever. Shell fish are in many cases grown in harbours and become contaminated by sewage, causing diarrhœa, vomiting, and (if the special organism be present) typhoid fever. Watercress may be polluted by the stream in which it grows being fouled, and salads may be polluted by impure water used during growth; these should always be thoroughly washed in *running* water (under the tap).

The course of an infectious fever is divided into the following stages or periods:

1. Incubation, or sickening.—An interval between the disease being "caught" and the appearance of definite signs. There may be an indefinite feeling of uneasiness, loss of vigour, etc., but sometimes there are no signs of illness.

2. Invasion.—The increase of the germs and the products of their activity now poisons the whole system. This stage is often ushered in by a rigor or shivering fit. It is marked by rise of temperature. In this stage the rash (if any) appears. The invasion stage runs a definite course of days or weeks, according to the disease.

3. Defervescence, or Decline. The period of returning to normal temperature. This may be by *crisis*, a sudden improvement, but more generally by *lysis*, a gradual improvement. In this stage great care is necessary to avoid "relapse" and complications.

**Disinfection** means destroying the germs of disease. This is generally done by physical or chemical agents. All soiled linen should be soaked in disinfectant at once. Deodorants must not be confused with disinfectants: camphor, scents, vapours from burning resins, etc., are deodorants, and are useless for the destruction of fever poisons. It is useless to put saucers of Condy's fluid or other disinfectant about the room.

Disinfectants may be classed as follows:—

1. **Dry Heat.**—Fire the most powerful. Things which can be burned should be burned—*e.g.* dressings, rags, old clothes, and all dust and refuse.

2. **Moist Heat.**—Boiling. Exposure to steam, very powerful; largely used in sanitary works.

3. **Certain Gases.**—Chlorine, sulphur fumes, useful for

disinfecting rooms and clothing in houses. Saturation should continue for twelve hours at least in a *moist* atmosphere.

4. **Chemical Agents in Solution.** — These are all poisonous. For disinfecting excreta, soiled linen, etc.—*e.g.* corrosive sublimate, carbolic acid, and many patent preparations such as Cyllin, Izal, Sanitas, etc. Cyllin and Izal are more effective than carbolic acid, are easier to mix, and, considering their efficiency, are cheaper. Solutions of Corrosive Sublimate must not be put into metal vessels, and should be coloured in some way.

5. **Dry Earth, etc.**, which acts by oxidation. In the country districts it is well to mix all Typhoid excreta with quicklime and bury it in the garden, provided there is no risk of contaminating the water supply.

6. **Fresh Air and Sunlight** are powerful disinfectants. Seven hours of sunlight will kill Typhoid Bacilli.

Disinfectants for domestic purposes :—

1. **For Soiled Linen, etc.** (immerse at once)—Corrosive Sublimate in water, 1 in 1,000—*i.e.* about 15 grains to one quart, or one soloid (Burroughs & Welcome & Co.) to each pint. Afterwards steaming or boiling.

2. **For Excreta**—Corrosive Sublimate in water, 1 in 500, *i.e.* about 15 grains to one pint or two soloids to a pint. N.B.—A bulk of solution equal to the excreta must be used.

3. **Disinfecting Basin** (always ready) for Nurses' hands—Carbolic Acid and water, 1 in 40.

For 1, 2, 3 Cyllin or Izal may be used according to the directions on the bottles.

4. **Crockery, Knives, Spoons,** etc. should be (if possible) boiled or should be placed in disinfectant (carbolic acid, 1 in 20, or Izal, etc.) and afterwards thoroughly washed.

5. **For Disinfection of Sick-room, etc.**—Sulphur, 1½lb. to be burned in room for every 1,000 cubic feet of air contained in the room. This, of course, can only be done when the room is vacated *after* the illness.

Isolation can seldom be done properly in an ordinary house, and it entails injurious confinement of the patient during recovery and great inconvenience and loss to the whole family. Cases of scarlet fever, diphtheria and small-pox, for which hospitals are provided, can be treated in them far better than at home. If, however, a patient has to be isolated at home it must be a rule that nothing which has gone into the room shall come out again without every effort having been made to disinfect it. All feeding cups, spoons, plates, etc., should be put into a disinfectant solution; food and liquids not used by the patient should be destroyed. Great care must be taken with regard to any books which have been used by the patient, they should, as a rule, be destroyed, as they can seldom be properly disinfected. A sheet must be hung over the outside of the door, and kept constantly damp all over by sprinkling a disinfectant fluid on it (this can be done with a watering-can or garden syringe). Any one who enters the room must get behind the sheet and then open the door. Food, coals, etc., should be put down outside the door and taken in by the nurse.*

A nurse in charge of an infectious case should refrain from bending over the patient, and not kiss or in other unnecessary way come in contact with him, she should at once wash her face and hands with some disinfectant if the patient coughs over her; and several times a day, especially

* The room and everything in it must be kept very clean; damp rags, wrung out of a disinfecting solution, should be used for removal of dust and afterwards burnt.

before food, gargle with disinfecting fluid, and clean her teeth with the same both before and after food, and never partake of food in the patient's room. She must wear in the room an overall and a cap covering all her hair, and before going out wash her face and hands thoroughly. If possible she should take off her dress and shoes and keep in an adjoining cupboard or room a change of outer clothing. She should go out of doors as much as possible instead of mingling with the rest of the family in other rooms.

If visitors are allowed (which is not at all advisable), they should sit between the window or door and the bed, and wear some wrapper, such as an old waterproof, which should be taken off on going out. They should wash their hands and faces and go straight out of doors. No dogs, cats, or other pets should be allowed in the sick room.

To disinfect a room after occupation by an infectious case, close the register or block the chimney up, shut the window and paste brown paper strips over all the crevices of the window, place in the centre of the room an old tray in which is some water, in the tray put an inverted flower-pot, or two bricks on end, and on them an old saucepan, in this place a sulphur candle or sulphur broken up, then (having ready some more strips of brown paper and paste) take some red hot cinders and cover the sulphur with them, or pour a little methylated spirit over and light it, then leave the room, close the door, and cover up every crack and the keyhole in the door with the brown paper strips; leave for twenty-four hours.*

After an infectious disorder the patient must have a hot bath, thoroughly washing every part including the head in two or three changes of water, and then put on a

* Such disinfection should be carried out, wherever possible, by the Sanitary Authority.

# SCHEDULE OF

(*The periods of isolation and*

| Disease. | Incubation Period. Early signs. | Day of the Defir ness on which th Appears. |
|---|---|---|
| SCARLET FEVER. | Within a week. Sudden vomiting, sore throat, headache, shivering. Rash usually first about neck and upper chest. | 1st. |
| DIPHTHERIA. | Within a week. Gradual illness, soreness and stiffness of throat, running from the nose. May be croupy breathing and hoarseness. | There is usually n but may he one like scarlet fever. |
| MEASLES. | Within a fortnight. Sneezing, running at the eyes, coughing. | 4th, but often the 3r patient is highly in for 3 or 4 days bef rash appears. |
| WHOOPING COUGH. | Within a fortnight. Fits of dry coughing and straining. | No rash. Highly in from the beginn disease and long be "whooping" stage. |
| SMALLPOX. | Within a fortnight. Chill or convulsion, headache, backache, vomiting. | Early on the 3rd |
| CHICKEN POX. | Within 3 weeks. Scattered pimples about the body. | Successive crops of th tion appear from da on the 1st, 2nd, 3 5th, and 6th, sor even up to the 10th |
| GERMAN MEASLES. | Within 3 weeks. Headache, sore throat sometimes. Rash about face. | 1st or 2nd. Infectio 3 days before rash a |
| MUMPS. | Within 3 weeks. Chilliness, stiffness, and swelling below the ears. | There is no ras |
| TYPHOID FEVER. | Within a month. Headache, chilliness, disturbed sleep, may he diarrhœa. | From the 7th da the commencement decline of the feve |

## ECTIOUS DISEASES.

*tion are stated in round numbers.)*

| Period of Isolation required after accidental Exposure to Infection. | Period of Isolation required after Suffering from the Disease. The patient is unsafe even after the periods stated below, unless the body and the clothes worn at the time of se zure are thoroughly disinfected. |
|---|---|
| 10 days. | 6 weeks from appearance of the rash as a minimum, and then to be dependent on the cessation of all peeling and *discharges from ears, eyes, nose, etc.* Special attention to be paid to examination of soles and palms, and of finger and toe-nails. |
| 10 days. | Until shown free by bacteriological examination (swabbing). |
| 18 days. | Until 3 weeks after the rash has gone. |
| 18 days. | A child may go to school in 6 weeks from the commencement of the "whoop," provided the spasmodic cough has ceased. |
| 18 days. | Until the whole of the skin is free from crusts. |
| 3 weeks. | Until every crust has fallen. This is 2, 3, or even 4 weeks. |
| 3 weeks. | Until 3 weeks have elapsed from the beginning of the illness. |
| 4 weeks. | Allow one week from the subsidence of all swelling. |
| None. | Typhoid patients are not usually isolated, but the evacuations from the bowels and bladdor must be disinfected for at least 3 weeks after the temperaturo has become normal. |

complete change of clothing. In towns, disinfection of rooms and of bedding, etc., is now done by the sanitary authorities free of expense. Care should be taken when sending articles for disinfection to include clothing, toys, etc., that have been used during the period of **incubation.** These are often put aside till after recovery and are then brought out, and may give the disease to others.

Infection is often spread by **slight cases** not being recognized—diphtheria being taken for "a little sore throat," scarlet fever for "nettlerash," measles for "a feverish cold," etc., etc., and it is therefore advisable to keep a child from school and obtain medical advice in any case when a child has signs of illness, even if it does not seem at all serious. These "slight" cases are apt to be followed by serious complications if overlooked or neglected. There is a popular belief that every child *must* have these complaints at some time or other, and that it is better to have them "over and done with." This is entirely a mistake. No child *need* have any infectious disease, and the longer these are put off the better will the child be able to stand against them. If the child has the complaint in a mild form it may nevertheless appear in a severe form in other children infected by him. There are certain infectious diseases (such as measles and whooping cough) which are often highly dangerous, especially to very young children, but they are not always compulsorily notifiable to the *sanitary* authority as is the case with others. In *all* cases of infectious disease, however, it is the duty of parents to notify the *school* authorities, and to cease sending the other children to school; the family should also have nothing to do with free libraries, blanket clubs, etc., and should keep away from church, and as far as possible from any crowded places. Children in the

family who have not had the complaint may be sent away, but not to a house where there are other children, nor where inconvenience will be caused should the complaint develop in them (as they may be incubating it).

[**School closure** is occasionally required to prevent the further spread of an infectious disease. This can be enforced by the Sanitary Authorities, and is especially useful in country places. (See Newsholme's *Hygiene*, p. 322.) ]

**Nursing.**—Children are apt to be suddenly attacked and the nurse must be prepared for restlessness and fretfulness. Diet should be mainly milk diluted with barley water, and light broths, etc., no meat essences or strong beef tea should be given. Plain *cold* water should be allowed frequently but not too much at once (offer only as much as the child may be allowed to have), also apple-water, home-made lemonade or other simple drinks. If there is no ice, these can be cooled by putting a wet cloth round the jug and placing in a draught. If the child is not old enough to be trusted with a piece of ice to suck, this may be twisted in a corner of a rag or bit of muslin held by the nurse.

In cases of **Measles** the room must be kept ventilated, and at an even warmth, not over 65° unless ordered, throughout the twenty-four hours. The doctor should be asked whether he wishes a steam kettle or poultices used. Do not let the light shine into the child's eyes. Use clean rags for wiping the nose and eyes and burn them after once using. Do not expose the child to any chill, but do not overload with blankets ; warm sponging is soothing and valuable. Damp and chill must be avoided during recovery.

**Scarlet Fever.**—"Scarlatina" is another name for the same disease. Strict isolation is imperative. The infection

is believed to be chiefly in the dry skin as it peels, also in the discharges from nose, ears, etc. Warm baths may be given on subsidence of the fever to hasten the peeling of the skin, but chill must be most carefully avoided. Carbolized oil may irritate the kidneys, and it is safer not to use it as sometimes advised; use plain oil to keep the skin from getting too "dusty." Report at once to the doctor any dark colour of urine or puffiness of the face or feet, headaches or vomiting.

Damp and chill must be avoided during recovery. If a child is found to have the skin of the hands and feet peeling and shreddy it has probably had an unrecognized attack of scarlet fever, and should be at once seen by a doctor.

**Diphtheria.**—Watch most carefully and inform the doctor at once if there is any hoarseness, croupy cough, increased difficulty in breathing, alteration in colour (especially blueness of the lips), delirium—and in the later stages any tendency to faintness, or choking during swallowing. Use rags as in measles for wiping up anything that may be coughed out or run from the nose—the discharges are very infectious. The rags are to be burned immediately after use. Feeding regularly is of the utmost importance. If there is faintness the patient is not to sit up in bed; and do not allow any sudden noise or disturbance, such as the door being unexpectedly opened.

In Scarlet Fever and Diphtheria applications to the throat are often ordered, and unruly or frightened children may make so much resistance as to become exhausted. The doctor should in such cases be asked whether these are to be continued, and if so, the child must be placed opposite a good light and be wrapped firmly in a blanket or sheet with the arms inside and the head held by an assistant, whilst the mouth is opened by putting the handle of a spoon on the

flat as far back as possible between the teeth and then turning it vertically ; it is generally necessary to flatten the tongue with the handle of a spoon in order to make the application in the proper place. The nurse in all cases should tie a handkerchief or some folds of muslin over her nose and mouth when making such applications, and wash her face afterwards. The spoon must, of course, be afterwards boiled.

**Typhoid or Enteric.**—This disease is spread chiefly by water becoming polluted with the discharges from typhoid fever patients; such may occur when a cesspit leaks into a well, or a drain is carried into a stream or harbour.

The water may be used for drinking, or for washing out milk-cans, etc., and so the poison is conveyed to other people. Watercress or oysters and other shell fish which have been grown in contaminated water are very dangerous. Infection may also occur by handling the bedclothes, utensils, or anything soiled by the discharges of a patient and neglecting to wash the hands thoroughly afterwards. The discharges, if not properly dealt with, may also be carried about by flies or dry up and be blown about as dust. There must be strict attention to cleanliness but with as little disturbance of the patient as possible. Precautions must be taken against bed sores. As the bowels are ulcerated, the diet must be strictly limited and given with regularity according to the doctor's directions, both during the continuance of the fever and during convalescence. Nothing whatever should be given without his approval being first obtained. The patient must be continuously watched, especially if delirious. Do not put strong disinfectant fluid in the bedpan before use, as it may run over or splash on the patient's skin, but disinfect afterwards, keeping, however, a specimen without disinfectant

until the doctor has seen it, if he so requires. All excretions (especially urine and fæces), by means of which the infection is spread, should be left in disinfectants four hours, breaking up any solid portions and mixing, if necessary, with a piece of stick, which should be burnt; and any soiled linen similarly disinfected or boiled for at least an hour. The nurse must be most particular in washing and disinfecting her hands after attending to the patient. Rubber gloves may be worn at such times—they should be large, so that they can be easily slipped on and off when wetted, and should be thoroughly washed after use and kept in disinfectant solution. Special nursing and feeding utensils must be kept for the patient and disinfected or placed in boiling water after use. Any wool, tow, etc., used for washing should be burnt. If there is no drainage system it is safer to mix the discharges with sawdust and paraffin and burn them than to bury them.

If the patient seems suddenly worse, becomes pale, has increased pain or swelling in the abdomen (belly), has a sudden drop in temperature, or passes blood, he must be kept lying absolutely still, and the doctor sent for. Stupor or collapse must not be taken for sleep. In the former conditions the patient must be roused to take nourishment or stimulants at such intervals as the doctor may advise, whereas, in the latter, he may be left undisturbed for four hours or even longer.

During convalescence the state of the bowels must be watched, and the doctor informed if they do not act regularly—this may make the patient very ill if neglected. Aperients must on no account be given unless ordered. The mind and body often remain weak for a long time after a bad attack, and all over-exertion and over-excitement must be avoided.

The occurrence of typhoid fever calls for enquiry in

regard to the purity of the milk and water used. This will be done by the Health Officers, meantime all such water and milk should be boiled before use. Water or milk which has been polluted is often quite free from any unpleasant taste or smell.

**Whooping Cough.**—In young children this is a very fatal disease, and death may occur in a sudden convulsion, so that they should never be left alone. If a fit should occur the tongue should be pulled forward by putting a finger at the back of the throat, cold water should be dashed in the face, smelling salts applied to the nose and a hot sponge to the throat. In many cases children may be out of doors when the weather is suitable, but not when it is damp and chilly; the doctor's approval should be obtained, and the neighbourhood of other children carefully shunned. If there is vomiting, food must be digestible, chiefly milk, and given frequently in small quantities, or if attacks are infrequent, soon *after* an attack. Avoid excitement and irritation.

**Chicken-Pox.**—The child must be prevented from scratching and picking, as sores and scars will be the result.

**Mumps.**—The mouth should be frequently rinsed, especially after taking milk or other food. If this is neglected, it is likely to become foul, as the usual movements are painful.

**Vaccination** consists in inoculating into some part of the body the germs of vaccinia or "cowpox"; this is a complaint resembling smallpox, but without its severe symptoms and dangers, and it protects for some years the person who has been vaccinated against an attack of smallpox. In recent epidemics the rate of attack amongst unvaccinated children was more than five times as great as

amongst the vaccinated, and the death rate more than ten times as great. In adults the rate amongst those vaccinated in infancy or childhood was nearer to the rate amongst the unvaccinated (but still far below it), shewing that vaccination wears out in course of years, and re-vaccination is necessary. It has also been proved that vaccination to afford protection must be done thoroughly in three or four places. Children should be re-vaccinated at the age of ten years, and adults whenever an epidemic occurs. Vaccine lymph is now always taken direct from the calf. When little blisters form they should on no account be poulticed or even washed but kept dry, powdered with boric powder, and protected with clean absorbent wool. If the doctor has applied a dressing, this should not be changed unless he so directs.

## CHAPTER V.

### The Care of Infants.

It is a mother's duty to nurse her baby, for if fed at the breast it has an *infinitely better chance* of living than if bottle fed.

Human milk is the perfect food for infants. Provided by nature, it contains all the necessary food constituents in such proportions as will best ensure a healthy growth. An infant should be fed at regular definite times. Hand-fed babies are never so healthy relatively as those suckled by their mothers, they are subject to stomach and intestinal disorders, to rickets and to bronchial catarrh, and though they may look fat, yet they are not able to resist acute disease when attacked. In summer it is found that breast-fed babies are remarkably free from diarrhœa, those partially breast-fed come next, whilst the mortality is very high amongst children fed by the bottle. Of the 124,222 deaths in England and Wales in a quarter (ending in September) of one year, 26,968 were children under one year, these young children died at the rate of nearly 300 every day, and one of the principal causes for this high death-rate is bad feeding. Though breast-feeding is the better, yet babies should not be allowed to be always at the breast, indigestion is the usual result, and in addition the health of the mother is impaired, and, as a consequence, her milk has not the right nutritive value. The breast should be given every two hours during the day for the first two months, every two and a-half hours during the third month, and after this every three hours till the child

is weaned—this should be done gradually when the child is between eight and nine months of age. No child should be kept at the breast after the ninth month. At night the intervals should be longer. A nursing mother should eat plain, simple food, taking rather larger supply of liquid in the form of milk, milk gruel or cocoa with milk, and secure due amount of fresh air and exercise every day.

Stout is *not* necessary for a nursing mother, but, if taken, it should only be with meals.

If for any reason the mother is unable to nurse the child entirely, she should *not* wean it, but should give it additional meals of cow's milk properly diluted.

The following directions are issued by the Public Control Department of the London County Council :—

### Directions as to the Care of Infants.

**Fresh Air and Sunlight.**—Infants require plenty of fresh air and light.

Bedrooms and living rooms should be well ventilated by opening windows.

Plenty of light—direct sunlight, if possible—should be admitted into the rooms.

Infants should not be kept too long in one room.

Infants should in fine weather be taken out for as long as possible during the daytime.

Care should be taken to avoid exposing infants to cold, damp, or draughts.

**Clothes.**—Infants' clothing should be soft and warm, but not tight, and should entirely cover neck, arms and legs.

The underclothing should be woollen.

**Washing.**—At least once a day young infants should be washed all over with warm water and curd soap, and gently and thoroughly dried with a clean, warm, and soft

towel, powdering creases with Fuller's earth or starch powder.

Clothes, napkins, or bedding should, when damp, be changed at once. Napkins should be washed, without soda, and thoroughly aired, before they are again used.

Infants' mattresses should be frequently cleaned or renewed.

**Proper Food.**—If an infant cannot be suckled, it should have no food but fresh cow's milk, mixed with warm water or with barley water, and also with a little lime water and a small quantity of white sugar.

All water used in feeding infants should be first boiled, and the food should be given warm.

Skimmed and separated milks are useless as foods for young infants. A good brand of condensed milk, preferably unsweetened, may *occasionally* be of service *for short periods*, especially during hot weather, but should *not* be used alone *for any length of time.*

Stale food must never be given to infants.

The quantity of food to be given at each time of feeding varies with the age of the infant.

A newly-born infant should have at least a quarter of a pint of milk in every twenty-four hours, and should be fed every two hours by day and every three to four hours by night. Every time the infant is fed it should have one tablespoonful of milk mixed with from one and a-half to two tablespoonfuls of barley water.

As the infant grows older, gradually decrease the number of meals and put less barley water in the milk.

Gradually *increase* the quantity of milk at each meal so that—

An infant three months old should have nearly a pint of milk, mixed with an equal quantity of barley water, daily.

An infant six months old should have at least a pint and a-half of milk mixed with about three-quarters of a pint of barley water daily.

An infant nine months old should have at least a quart of milk, mixed with about half a pint of barley water, daily, which may be slightly thickened with well-baked flour or nursery biscuit. A little red gravy, broth, or beef-tea or the yolk of a lightly-boiled egg with bread crumbs, may also be given at the mid-day meal.

An infant twelve months old, in addition to a quart of undiluted milk daily, may be given bread and milk, bread and butter, milk pudding, a little red gravy with bread crumbs, a little mashed potato, the yolk of a lightly-boiled egg, mutton broth, or bread crumbs in bacon fat.

An infant eighteen months old or over, in addition to a sufficient quantity of milk, may be given a little finely-minced meat or fresh white fish with bread.

**Preparation of the Food. To prepare Milk.**—The milk should be quite fresh, and obtained, if possible, twice a day.* It should be placed in a covered jar or basin in a saucepan of boiling water upon the fire for about twenty minutes. The covered vessel should be then placed in cold water until the milk is cold.

**To make Barley Water.**—Barley water should be made by taking two teaspoonfuls of powdered barley, adding one pint of boiling water, and then boiling for five minutes. Barley water must be made fresh daily and kept covered in a cool place.

**Injurious Food.**—Infants should never be given tea, coffee, beer, spirits, cheese, pickles, salted or smoked fish or meats, or other highly-seasoned foods.

---

* Milk sold as "sterilized" has sometimes been sterilized when *stale*. "Sterilized" milk should only be bought, if at all, when a guarantee is given that perfectly fresh milk has been used.

Green vegetables and raw fruit should only be given when a child is over three years, but a little orange juice or grape juice may be given to younger infants.

No solid food, such as bread, biscuits, bread-sops, or patent foods, should be given to infants under nine months.

**Bottles.**—Infants are best fed by a spoon, not by a bottle. If a bottle is used, it should not have a tube, but merely a rubber teat.

Feeding bottles should be taken to pieces every time after use, each part washed thoroughly with hot water and soda, rinsed with cold water, and then placed in cold water until again wanted.*

Milk vessels should be scalded after use.

**Regularity.**—Trouble to the nurse and ill-health to the infant are saved by strict regularity in feeding, washing, and putting to bed.

**Caution:**—

1.—If food does not agree, or the infant is otherwise unwell, a doctor's advice should *at once* be obtained.

2.—An infant should *never* be given soothing medicines, sleeping draughts, cordials, teething powders, etc.

3.—An infant should sleep in a cot by itself. It should never sleep in the same bed with another person.

4.—A fire-guard should be provided in all nurseries.

* The bottle should have a good-sized neck and have no angle which cannot be easily cleaned. For a brush, a piece of clean rag may be fixed to a stick—it should be boiled or thrown away after once using. If a bristle brush is used, great care must be taken to see that no loose bristles are left in the bottle or teat, and that the brush is thoroughly washed. The bottle, etc., should not be allowed to dry after feeding, but taken to pieces and put into clean water if it cannot be immediately washed. The teat should be large, so that it can be turned inside out and well brushed and washed under the tap after use. It should then be scalded in boiling water, and kept in cold boiled water in a covered vessel till wanted. It is advisable to have two bottles and some spare teats.

**Fresh Air and Sunshine** are as needful for babies as for plants which grow up weak and blanched if they are deprived of them. Infants should be taken out daily, unless there is fog, heavy rain, or very cold wind. A bassinette-perambulator, or even a box on wheels in which the baby can lie and sleep, is preferable to carrying in the arms. The modern "pushcarts" are objectionable—there is no proper support for a young baby, and coverings cannot be well arranged to keep one warm—and accidents are very apt to occur from the baby slipping, or the cart being overturned. Care must be taken not to leave the perambulator in draughty places, or near the openings of drains, or on a slope where it may run away.

**Clothing** should not only be warm and easy fitting, but also made as simply as possible, so that dressing and undressing is not a long and tiresome affair. Heavy embroidered cloaks, long lace robes, etc., are of use only to gratify the parents, for the true purposes of clothing they are useless.

Babies indeed are as a rule dressed in a way which interferes greatly with their comfort, breathing, digestion, and free movement of their limbs.

The binder is nearly always applied too tightly in the mistaken belief that it will "support the back" or "prevent a rupture." The breathing is interfered with, and the infant is usually fed after it has been put on, although no allowance has been made for the increased size of the stomach, with the result that there is crying, indigestion, flatulence, and a likelihood of a rupture *in the groin*, which is far more serious that one at the navel.

Later on, the abdomen and legs are usually too much exposed, whilst the chest is over-clothed, and things are

still selected with a view to appearance, rather than health and comfort.

**Bathing.**—Coarse soaps must never be used. Cheap highly-scented soaps are often irritating. The skin between the legs should be washed and well dried and powdered whenever it has become wet or soiled. When giving a baby a bath, a plaything of rubber or cork in the water will often prevent crying. If there is much fright a blanket should be spread over the bath, and the little one gradually lowered into the water as it sits on the blanket. Great care must be taken to thoroughly dry the folds about the ears, armpits, navel, and groins, afterwards powdering with pure starch or boracic powder. If there is soreness, use instead of soap some very thin gruel or barley water and apply zinc or boracic ointment. Any crusting on the head should be softened with oil, and removed with soap and warm water. Sores may form underneath if neglected.

**Food.**—The following table gives the quantities suitable for a healthy baby :—

| Age of Child. | Milk. | Water or Barley Water. | Total Amount to be Given at each Meal. |
|---|---|---|---|
| During first fortnight | 1 Tablespoon | 2 Tablespoons | 3 Tablespoons |
| ,, 2nd ,, | 2 ,, | 3 ,, | 5 ,, |
| ,, 2nd month | 2 ,, | 3 ,, | 5 ,, |
| ,, 3rd ,, | 4 ,, | 4 ,, | 8 ,, |
| ,, 4th ,, | 5 ,, | 4 ,, | 9 ,, |
| ,, 5th ,, | 6 ,, | 4 ,, | 10 ,, |
| ,, 6th ,, | 8 ,, | 4 ,, | 12 ,, |
| ,, 7th ,, | 9 ,, | 4 ,, | 13 ,, |
| ,, 8th ,, | 10 ,, | 4 ,, | 14 ,, |
| ,, 9th ,, | 12 ,, | 4 ,, | 16 ,, |

Food must, of course, be given warm (98°-99°). The

abdomen should be gently rubbed with the warm hand and a fomentation applied.

There is a very serious form known as **Summer Diarrhœa**, a disease occurring in the later months of summer, and affecting the young, especially bottle-fed infants, to whom it is very fatal. Medical advice is required *at once*. The germs are probably carried in dust and by flies from dust-bins and refuse heaps to milk, in which virulent chemical changes are set up, so that it causes excessive diarrhœa and vomiting. Infants may also contract the disease from dirt being conveyed to their mouths in other ways, such as by crawling on dirty floors, sucking unclean comforters. All soiled napkins, etc., must be carefully disinfected or boiled.

For its prevention strict cleanliness is essential—and all milk, sugar, and other food of infants must be carefully covered so that flies cannot settle on it, besides taking the other precautions already mentioned. If possible, babies should not be weaned during the months from the middle of June to the beginning of October. Infants fed only at the breast rarely suffer.

Stale milk is at all times a source of great danger, even if previously boiled.

**Rickets** is described in Chapter VI.

**Scurvy** is due to feeding on patent foods and over-boiled milk. The baby becomes pallid and lies helplessly, but screams on account of tenderness when touched. There may be staining of the skin, as if from bruises, and swellings in the limbs; if the teeth have been cut, the gums become spongy and bleed. Great care is necessary in handling—no part must be allowed to hang unsupported. A doctor's advice must be obtained, and the diet altered under his direction.

**Thrush** appears as little white patches, with soreness about the inside of the mouth. It chiefly occurs in weakly infants, where there has been want of care in the cleansing of the feeding bottle and teat. A soft rag wet with boracic lotion should be used after the bottle has been taken and the mouth thoroughly but gently wiped out. It is advisable to do this for *prevention* in all cases of hand-fed babies. Sore places should be painted with borax and glycerine.

**Inflamed Eyes.**—The appearance of gumminess, redness, or discharge in the eyes of an infant within the first few days of birth has all the appearance of, and is often mistaken for, a slight "cold" in the eyes ; if it is not *at once* treated by a doctor, life-long blindness may be the result. It cannot be properly treated by any home remedies.

**Convulsions.**—Loosen all tight clothing, and if there are any teeth, put a small cork, with a string attached for security, or india-rubber ring between them. As soon as possible put the baby into a warm bath, the nurse testing the heat of the water first with her elbow if she has no thermometer, and sponge the head with cold water. Keep in the bath five minutes and wrap in a warm blanket, keeping rags dipped in cold water to the head, and gently rub the belly with the warmed hand until the arrival of the doctor. A simple enema (two ounces, or more according to age) may also be given.

**Sleep.**—Babies and young children should never be allowed to sleep, either night or day, with the face covered by the bed-clothes or by a thick veil. Impure air is re-breathed, any change may escape notice, and there is always some risk of suffocation from alteration of position. Regular times should be arranged for sleep in well-ventilated rooms. Baby should never be awakened suddenly. Numerous deaths occur from babies being kept in bed with the

mothers, and "overlaid" during the night. A baby should be in a separate cot or basket, or even an egg-box if nothing better can be afforded. The coverings should be light but warm, and in winter a hot water bottle may be put in at the foot, care being taken that it does not leak and is well wrapped in flannel or a small blanket.

It is also healthier for older children to sleep in separate cots or beds when this can be arranged.

Much of the peevishness of teething babies is due to thirst, which should be relieved by giving a little cold boiled water with a teaspoon. The sucking of dummy teats, or **comforters,** causes wind and colic, and sets up an unnatural craving. They also get sour and dirty and harbour germs of disease, and, in addition, the shape of the jaws and the direction of the teeth are liable to be altered, causing deformity later on.

Do not accustom a baby to be constantly carried in the arms, "jigged" on the knee, and always rocked or sung to sleep. Such practices are bad both for mother and infant. A baby should be put to lie on the side during and after a meal—if on the back, choking is more likely to occur should there be vomiting.

## Nursing of Infants and Young Children.

There are certain points which should be borne in mind by everyone having the care of infants and young children. Babies who have not been from the first trained to regular habits in regard to sleep and feeding, and children who have been "spoilt" and allowed to have their own way, are often very difficult to deal with when ill, and the illness may become in consequence far more serious than it would have been otherwise.

Some children can be managed by a little encouragement

and coaxing, but others remain obstinate. In such unfortunate cases, if there is much resistance to giving medicine, etc., the doctor should be asked whether it is absolutely necessary, as if there is an exhausting fight over every dose, this may do more harm than the medicine does good. If old enough to understand, the child should be told that it is not worth while to make him take it if he is so silly as to prefer to be ill, but if the doctor thinks it essential time should not be wasted in bribery and entreaties. The child should be laid across the nurse's lap, whilst one person on her left holds the head steady by putting the hands flat on each side of it and another holds the child's hands down on the thighs, putting the child's legs between her knees; or the arms may be confined to the body by wrapping firmly in a roller towel. In such cases firmness is the truest kindness.

The child must be dealt with in a similar way in regard to other treatment, that is, this should be either left alone altogether or firmly insisted upon and effectually carried out. There should be no half measures. A nurse should be absolutely truthful in dealing with a sick child. Children are very quick in discovering insincerity, and always resent it. If medicine is nasty the child should not be told it is nice, but encouraged to be brave and take it off quickly. On no account should a nurse ever threaten to call in the doctor to inflict punishment. A child should always be taught to regard a doctor as a friend who will make him well, and his task is often made very difficult by weak and foolish people teaching children to think of him as an enemy.

Infants and young children often change very rapidly—one who seems to have little the matter may in a very few hours be dangerously ill; or, on the other hand, may

suddenly become very ill and in a few hours recover completely under proper treatment.

More depends upon careful observation than in the case of grown-up patients. A baby if in pain cannot say where the pain is, and a small child, not knowing the exact meaning of words, will often give an answer likely to lead one quite astray, or may try to conceal the trouble from shyness, dislike of medicine, etc.

The practical lessons to be drawn are these—that no signs of illness, however trivial, should be neglected—and also that the one who is in charge should notice everything very carefully, so that she may be able to give the doctor a clear account. The doctor will very often find it necessary to make a thorough examination of the whole body, when the nurse would not suppose it necessary; and, therefore, before taking a baby or young child to a doctor the coverings should be so arranged that time may not be wasted, and the child irritated and made difficult to examine by having to undergo a long process of undressing. The best way is to take off all clothing except a loose vest or dressing-gown, and wrap in a warm shawl or blanket, and this should always be done if the doctor visits at the house.

### Special Points for Observation.

**Crying.**—Babies cry more often from indigestion caused by improper feeding or over-feeding than from hunger, and although they may be pacified for the time by giving the breast or the bottle when such is the case, they soon cry worse than before. There are many other causes which should be borne in mind, such as thirst, fright, fatigue from noise or strong light, cold, discomfort from tightness or wetness of underclothing, pins, fleas.

There are different kinds of crying, for different reasons.

Thus, crying due to indigestion and griping is loud, often accompanied by vomiting or discharge of wind, and the baby writhes and draws up its legs; whilst the cry from inflammation in the chest is short and stifled, because breath cannot be spared for a long cry, and pain is caused by the movement of the chest in doing so. There are many other instances, but these are given to show how important it is carefully to notice details.

**State of Bowels.**—The condition of the evacuations from the bowels must be watched daily. This must be done especially in hand-fed babies, as regards lumps of undigested milk curd; which show that the food needs altering in quality or quantity.

As a rule, inaction of the bowels is not to be treated by aperient medicine, but by alteration of the diet. On no account give a baby or child any aperients, such as castor oil, to relieve a "stoppage," if this is accompanied by pain, tenderness of the belly, vomiting, or passage of slime or blood.

**Giving Medicines.**—Powders may be given to infants by taking them up on the moistened feeding teat and letting them be sucked off, and to older children in a spoonful of honey or bread and milk, or between thin bread and butter. If the medicine is bitter give sugar or a peppermint lozenge beforehand, to older children. If the mouth be dry, as in fever, give a little cold water first. It is not a good plan to shake cod-liver or castor oil with milk, as this may cause a dislike to milk. It may be given with peppermint water. Never give children quack (patent) medicines, nor any medicine which has been ordered for a grown-up person.

A baby's or child's temperature should never be taken in the mouth; under the arm-pit or in the groin are the usual places, before washing or changing. A nurse should

accustom herself to count the respirations and take the pulse whilst the child is asleep, and without waking the little one. The pulse may be taken easily in the artery that runs over the temple in front of the ear. Nervous children are apt to become delirious when their temperature is only a little above normal.

A baby in good health has a smooth, soft skin, clear eyes, pink cheeks and red lips. The limbs are rounded and the body well covered, but there is *no excess of fat*—the tissues feel firm, not flabby. The bowels act at least once a day, the motions being soft, but not loose, and of a deep yellow colour. The greater part of its time is passed in quiet sleep. The weight steadily increases at the rate of at least a pound a month during the first year, and three-quarters of a pound a month the second year, so that at two years of age the weight should be over two stones. The weight is a good indication of health. Every baby should be weighed once a week, at the same time of day, during the first month, then every fortnight for three months, once a month the rest of the first year, and every two months during the second year, when all seems well, but more often if not getting on. A small baby may be laid on a folded flannel or blanket and put on the pan of a pair of kitchen or shop scales—care must be taken to deduct the weight of the flannel or blanket, and if weighed in clothes to weigh the clothes carefully afterwards and deduct their weight. The baby's net weight should be at once noted in a book.

Older children should also be weighed regularly, and the weight of the clothes deducted, as in case of babies. Twice a year is enough if the health seems good. Weight is gained chiefly in the autumn and winter; in the latter part of summer even healthy children may lose weight a little.

## CHAPTER VI.

### The Care of Children.

The same care must be continued as in infancy in regard to admission of fresh air and sunlight to rooms, suitable food and clothing, cleanliness, exercise and rest.

**Food.**—For young children milk in some form (such as milk porridge, milk puddings) should still be the staple food.

**Diet for child 2 years.—**

7.30 a.m. A breakfast cupful of milk porridge or of milk with a slice of bread and butter, dripping or bacon fat.

11 a.m. Milk and biscuit.

1 p.m. An egg, or a dessertspoonful of well minced or pounded meat (not over done) or fish, with gravy and a well-mashed potato. A little spinach or cauliflower may be given. A tablespoonful of milky rice or other pudding. Water to drink.

5 p.m. Milk and biscuits.

10 p.m. Milk with some farinaceous food—thin enough to pass through a bottle, so that it may be given without thoroughly waking.

Many children are best without meat or fish to the age of three or four, and if doing well there should be no hurry to give it them, but the quantity of milk increased.

**At 3 or 4 years,** the diet should be similar to the above. Some fruit, such as a part of an orange, a baked apple, or stewed prunes, should be given daily at or before breakfast. When solid food is given by the nurse she must allow time for mastication. Lentil soup or pea soup may be given, or broths, with rice, macaroni, etc., as an alternative to meat or fish.

Children of this age should not have ham, sausages, kippers, shell-fish, or any salt or dried meats, fried meat; nor raw vegetables, such as radishes, celery, salads, pickles, hot cakes, currant cakes, pastry, new bread, nuts; nor fruit containing hard seeds, such as blackberries, raspberries, and these should seldom be allowed to older children. Vegetables must be tender and well cooked. Soft fruits when thoroughly ripe and fresh are valuable. Fruit should be given early in the day,

Beer, tea, coffee, pepper and mustard are harmful at this age, and quite unnecessary for older children.

Sugar (including honey, treacle, jam, etc.) is a necessary food for growing children. Fat in some form is necessary, especially in cold weather.

Pure sweetmeats, toffee, treacle, honey (jam provided it does not take the place of butter, and is of a good brand, not cheap rubbish), and light, well-baked plain cakes, given in moderation, are excellent for children, but they should not be allowed between meals, as they will then destroy the appetite and digestion. In summer they must be forbidden to touch unripe or unsound fruit, cheap ices, etc., such things being a frequent cause of diarrhœa.

When a child knows how to masticate properly, crusts, cold toast, dry biscuits should be given frequently to encourage the formation of a good habit—soft white bread is often swallowed without being properly mixed with the saliva which helps to digest it. *Water* should be given to drink whenever thirst occurs. Babies who are restless and fretful often need nothing more to quicten them. Milk should be regarded as a food, and not as a drink to be given at any time.

Later on, if the child gets up long before breakfast, some milk and a crust or biscuit should be given on waking, bread

and milk or porridge being still given at breakfast, followed by a little fat bacon, an egg, or fresh fish, and the milk at 11 a.m. omitted, and as the bedtime becomes later some bread and milk or porridge should be given at 8 p.m.

The young require more food relatively to their weight than those who have reached maturity. It has been calculated that a child nine years old needs half as much food as a man doing moderate work.

Growing children require a due amount of nitrogenous food, such as meat, fish, poultry, eggs, cheese,* and also of fat, such as suet, fat bacon, butter, good margarine (which is wholesome and cheap), and dripping. Beef tea, meat extracts, etc., are, as a rule, quite unnecessary, and even harmful to children.

Breakfast is not a meal to be hurried over and followed by a rush to school.

Mastication is important for proper digestion, and children should be made to do it slowly and thoroughly, so that it may become a matter of habit in after-life. If they are allowed to "dream," or to talk too much at meals, the last mouthfuls are apt to be crammed down hastily.

As regards the diet of older children it is not desirable to lay down hard and fast rules as regards quantities (but see Appendix); one should pay attention rather to supplying palatable, nourishing and digestible articles, and to train them to eat regularly and slowly. If a child is so habituated it may be trusted to satisfy its appetite. If the appetite is unsatisfactory and the child not thriving, there is probably something amiss with the child's health,

---

* The *cheapest* kinds of "building material" are *skim*-milk, some kinds of fish (such as haddock), cheese, and the pulses (such as peas, beans and lentils).

or with the way in which it is being brought up as regards fresh air, exercise, etc., or with the food supplied, and the true cause must be sought for instead of forcing to eat; food taken against inclination is seldom properly digested, and so does more harm than good.

Some children have an uncontrollable dislike to certain articles of diet and even vomit if obliged to take them. These peculiarities cannot be overcome by force, they generally wear out in time if left alone, and meanwhile one may meet the difficulty by a little management—for instance, a child who cannot eat the fat of roast meat will often take suet pudding. Mere "fads" and desire to give trouble must, however, not be encouraged.

Dainties should not be given to "tempt the appetite," except in case of illness, nor should food be allowed between meals when it has been declined at the regular times.

The child's growth should be carefully observed and the proportion between height and weight noted, as well as height and weight in reference to age. That is, if taller for his age than is usual, he ought also to be heavier; but if shorter than is usual at his age, it is not enough for him to weigh as much as younger children of the same height—in such case height and weight are both below the mark. (See Appendix for Tables of Average Weights.)

The bowels should act regularly. This is very much a matter of habit, and children should be sent to the closet at the same hour every day. Constipation should be treated by diet rather than drugs—the amount of fluid and of fat should be increased, and porridge, fresh or stewed fruit given. The belly may be rubbed slowly night and morning with the warmed hand, using a little oil, starting at the right hand lower corner and working round above the navel to the left hand lower corner.

**Clothing.**—It ought to be clearly understood that no clothing is warm *in itself;* it only prevents our own natural or animal heat from escaping too quickly.

[It does this by putting between our bodies and the cooler air some material which is not a good conductor of heat. Substances differ very much in this respect. If a bar of iron is heated at one end in the fire the other end will soon become so hot that it cannot be borne by the hand, whereas a wooden stick can be held till it is burnt close to the fingers ; and considerable differences in conductivity exist between substances which may in some other respects resemble one another ; for instance, silk, wool and cotton fibres. The conductivity of air, when not allowed to diffuse, is very small indeed, and so all spongy, fluffy, or loosely packed materials, in the interstices of which air remains almost stationary, offer great resistance to the propagation of heat. Water-pipes are wrapped in straw at the approach of frost (it would be no use to do so when the water in them is once frozen), and the same means are used to hinder anything colder than the atmosphere from becoming warm ; thus ice is packed in bran or wrapped in flannel.]

Therefore, in selecting articles of clothing, we should see that the material is a slow conductor of heat, and porous or loose in texture. We must also take care that the garments do not fit too tightly. Woollen materials and knitted things are "warmer," that is, they prevent our own heat from being lost better than cotton and closely woven stuffs. Blankets when new are much warmer than when by washing they have been "shrunk" so that the fibres lie closely together, and it will generally be found that two thin coats are warmer than one thick one. There is no need for warm clothing to be *heavy*.

Another objection to clothing of too close a texture is that it does not allow the exhalations from the skin to escape as they should, and its proper action is interfered with.

There must be plenty of room for the chest and abdomen to expand and for the limbs to move freely, so that there is no interference with circulation, respiration, digestion and muscular action. This is especially necessary in case of children. Boys should wear loose jerseys, or "Norfolk jackets," and not waistcoats, which they outgrow before they are worn out; and girls should not wear stiff or tight stays. (See Appendix.)

For underclothing at all ages woollen stuff (flannel, merino) should be used, and cotton stuffs only if loosely woven or knitted, not ordinary calico. "Flannelette" is a *cotton,* and is very dangerous from the ease with which it catches fire.

If the bedclothes are thrown off by children's restlessness they should be attached by clips or tapes to the head of the bedstead, and a sleeping suit should be provided or a long nightgown safety-pinned or buttoned below the feet.

Coldness of the feet, which is often a cause of sleeplessness, should be met, in case of babies, by rubbing with the warm hand or a bath towel, a hot-water bottle (wrapped in flannel) put in the bed; and in case of older children by a good romp before going to bed.

The feet should be well protected in wet weather by stout boots and woollen stockings. Leaky boots are a common cause of illness in children. The boots should also have broad toes, low heels, and not be tight, otherwise they interfere with exercise and cause deformities of the feet, which will be a life-long trouble.

Fanciful clothes, made of materials easily spoilt, lace collars, shoes with high heels and spike-shaped toes, etc., etc., are altogether unsuitable for children, and if worn at all should be kept for special occasions. Young children have a natural love for romping, by which they uncon-

sciously train their muscles for future use (just as a kitten does when chasing a dead leaf or pouncing on a bit of string); and with this the fashion of their garments should never be allowed to interfere.

Children become chilled much quicker than adults, and the so-called "hardening" of children (that is wilfully exposing them to cold and wet) is a foolish practice, which has the opposite effect to that which is intended. "Coddling" (that is keeping them in stuffy rooms and overloading them with clothes) is equally wrong.

**Exercise and Rest.**—This must be according to age. Open-air exercise is absolutely necessary for health and growth but must not be carried to over-fatigue. Children should not be taken for long walks. Little children in playing with older ones are often made or tempted to overtire themselves. Children should not be allowed to play some boisterous game just before a meal—a little time should be allowed to settle down—and the same afterwards. When children are out in cold weather they must be kept moving. In summer weather they should keep quiet during the hottest part of the day, and the head and back should be well protected, especially at the seaside. They should not spend too long a time in paddling or swimming, which, *in excess*, may lead to illness. Rest must be taken in airy rooms at regular hours. A child 2 years of age should sleep 14 hours; one of 4, 12 hours; one of 8, 11 hours; one of 12, 10 hours; and one of 16, 9 hours out of the 24.

**Cleanliness.**—Cold or tepid baths should be given in the morning, and should be taken *quickly* without much standing about in using the soap, and should consist of a rapid sponging, followed by brisk towelling and hand-rubbing. If there is not good reaction or "glow"—that is, if there is chillness, pallor or blueness afterwards—the cold bath

will do harm instead of good. The temperature of the water should not be below 60°. Many children can bear baths better by standing in a sponge bath of warm water whilst the cold water is rapidly poured or sponged over the body. Warm baths should be given the last thing at night, at least once or twice a week, and the child at once put to bed, in warmed night clothing. The hair should be regularly washed (well dried afterwards), combed and brushed, and if much time cannot be spent in attending to it the shorter it is kept the better. Girls should wear it cut short or in plaits, or tied behind—it should never fall over the eyes and ears. The nails should be clipped short and children made to use the nail brush, especially before every meal. Dirty nails lead to many diseases. Little children should not be allowed to "grub" in the dirt, and should be kept away from the neighbourhood of dustbins, refuse heaps and drains.

**Teeth.**—The double teeth which are cut at the age of six years are not shed but are meant to last for life. Teeth, even of the temporary set, when decayed do much harm by causing imperfect mastication with consequent indigestion, also an unhealthy state of the mouth, throat and glands in the neck. Children must be taught to use the brush regularly, especially the last thing at night, and when irregularity or decay is found the advice of a dentist should be obtained at once.

**Rickets** is a very common complaint, especially in large cities, and is due mainly to a faulty diet, such as condensed milk, or too much starchy, and too little fatty food. Lime water and patent foods and medicines do not supply the defect. Want of sunlight, impure air, over-prolonged suckling, also tend to produce it. The bones become soft, and bend; swellings may be noticed at

the wrists, ankles, and in the ribs near the breast-bone. The child is apathetic or irritable, is late in walking and cutting teeth, restless at night, throwing off the clothes, and sweating about the head. The skin becomes pale (but there is often a flush on the cheeks), and the tissues soft and flabby—generally there is loss of flesh, but there may be an unhealthy amount of fat. There is liability to indigestion, bronchitis, convulsions, and many other disorders.

The diet must be regulated, good creamy cow's milk being the chief food, with eggs, well-boiled oatmeal, etc., pounded raw meat or raw meat juice according to age. Sweetened condensed milks, although containing cream, require so much added water as to make them quite unsuitable. The child should be (warmly clad) in the open air the greater part of the day. A hot water bottle should be put in the perambulator in cold weather. A flannel binder should be worn round the abdomen. Cod-liver oil is valuable in this complaint, also gentle rubbing with sweet oil after warm bathing. To avoid deformities of the legs, the child should not be allowed to walk, and to prevent this it may be necessary to apply splints reaching beyond the feet.

**Lateral Curvature of the Spine,** "shoulder growing out," occurs chiefly in girls, and is due to weakness of the muscles of the back. It must not be confused with *angular* curvature, the "hump-back" due to disease of the bones. The deformity may become life-long if neglected, and it shows that there is something wrong in the constitution or in the conditions under which the girl is growing up. Stiff tight stays lead to this complaint by weakening the muscles of the back. She is generally listless and bloodless, the onset of consumption is favoured

by the contracted state of the chest. Faulty positions in sitting and standing should be corrected and regular exercises carried out under medical supervision.

"**Adenoids**" means an enlargement of a structure like the tonsils, which is situated at the back of the nose behind the palate. The tonsils may be also enlarged, but are not always. Breathing should always take place through the nose because the air in passing through it is warmed, moistened and filtered from germs. Children and persons with adenoids are, however, obliged to breathe through the mouth because the back of the nose is blocked. The disorder may be recognised by the mouth being perpetually open, by the vacant expression of the face, snoring, and bad dreams at night, frequent colds and snuffling, a twang in the voice, often so-called "stupidity," and deafness, from affection of the passages between the ears and the throat. Any child with such signs should be seen by a doctor without delay.

**Rheumatism** or **Rheumatic Fever** in children is often neglected because it does not come on severely and lay the child up—it is, however, very dangerous, as it often affects the heart. Frequently there is very little or no pain in the joints. A very large proportion of cases of heart disease in adult life can, if careful enquiry be made, be traced back to unrecognised rheumatism, or rheumatism with fever, in early childhood. Many children suffer from mild attacks of rheumatic fever which, though unrecognised, nevertheless cripples the heart for life. "Growing pains," shortness of breath, paleness, may be the only signs.

[**Chorea or St. Vitus' Dance.**—This occurs chiefly in ill-fed rapidly-growing girls who are worried or overworked. The child becomes irritable or tearful, unable to do lessons without mistakes, "fidgety," "clumsy," and at last unable to

keep still, constantly making grimaces, working the fingers and shuffling the feet; at first she is often, unfortunately, supposed to be careless or ill-tempered and is punished accordingly.

Signs as above, especially if not usual in the child in question, and accompanied by sleeplessness and headache (in regard to which enquiry may be made of the parents) are very suggestive and call for immediate medical examination, not for punishment If the hands cannot be held up perfectly steady, both at once, with extended arms, palms to the front, the fingers outstretched, the probability is confirmed. Another test is to let the child place her open hands upon yours, palm to palm. Look at the backs of the child's hands for two or three minutes and see whether the fingers and thumbs, especially the latter, lie naturally without twitching or stiffness.]

**Sore Throat** in children should never be neglected, for the reasons given under "Infectious Diseases."

**So-called "Growing Pains."** Growing tissue does not produce pain. The pain is due to many different causes, such as rheumatism, an early stage of tuberculous disease of bones or joints, rickets, etc., and medical examination is necessary. The same may be said of *limping* or any unusual awkwardness in movement.

**Deafness** is often associated with adenoids, and in any case requires medical examination. *Discharge from the ears* should never be neglected, it may lead to life-long deafness, and even to abscess in the brain or inflammation of its coverings (meningitis). "Boxing the ears" is a dangerous form of punishment, and may cause rupture of the drumhead.

**Headaches** in children may be due to *strain of the eyes*, which should be tested by a surgeon-oculist, either in private or at a hospital (*not* by an optician or spectacle-maker). Watering of and redness of the eyes, inflammation of the lids, may be caused in the same way. *Squint* occurring even in infants also requires proper treatment by an oculist directly it is noticed, as the eyes are permanently strained and weakened if it be neglected.

**Night Terrors and Sleep Walking** are due to various causes, such as sleeping in a stuffy bedroom, overheating by too many blankets, adenoids, late and indigestible suppers, being kept up too late or over-excited, over-pressure at school, terrifying stories or pictures. The child should be spoken to in a calm and reassuring voice, the face and hands sponged, and the bed made comfortable. The cause should be sought for and corrected.

**Asthma.**—In such cases there are attacks of difficulty of breathing, often at night-time, the child is obliged to sit up in bed and "fight for breath." Indigestible food must be avoided, especially in the evening. Medical advice is needed, as there may be other disorders connected with the complaint, and treatment must be varied accordingly. The term "asthma" is often incorrectly applied to many forms of difficult breathing which require different treatment.

**Bed-Wetting** is much more often a disease requiring treatment than a fault requiring punishment, and a doctor's advice should always be obtained when it is persistent. Notice should be taken as to the length of time during which the urine is held during the day, and the amount passed. Late suppers should not be given and little fluid allowed during the evening. Too great weight of bed-clothes and a habit of sleeping on the back should be avoided. The child should be made to pass water just before going to bed, and taken up again in three or four hours. Cold sponging of the back and between the thighs may be done.

**Parasites.**—**Thread Worms** look like short white threads, and may be found in the motions passed by the child or about the back passage. There is usually much itching of the parts, and a blood-stained discharge may be caused by

scratching. In addition to medical treatment, great care must be taken to wash the parts thoroughly after each stool, and to keep the nails short and clean, as the eggs may be carried to the mouth by the fingers and re-infection produced.

**Round Worms** resemble garden worms. **Tape Worms** are flat (like tape). These are passed in the motions, which is the only sure proof that the child has them. Medical treatment is needed to get rid of them, and also for the stomach and bowels, which are usually out of order.

**Parasitic Diseases of the Skin.**—These are all formed by want of care and cleanliness during school life. When contracted, treatment must be thorough and persevering or the disorder will soon be as bad as before.

**Animal Parasites, Pediculi or Lice.**—The kind affecting the head differs from that affecting the body. The *head louse* is found chiefly where the hair is thickest and longest, over the ears and the back of the head. They multiply rapidly, the eggs (nits) being attached to the hair and taking about nine days to hatch. The *body louse* lays its eggs in the folds of the clothing, and are found especially about the shoulders, neck and waist, where the clothes touch. These insects insert their suckers into the pores of the skin, making tiny wounds which are very irritable and induce scratching, thus they become sore and infected with dirt and abscesses may occur in the skin, and neighbouring glands become enlarged and suppurate. The hair should be cut short and soaked in kerozene oil or Izal (one tablespoonful to a pint of water), the head being leant backwards over a basin so that none goes into the eyes ; it should then be thoroughly washed and a fine comb used daily for a fortnight, as some of the nits (the tiny eggs which stick to the hair) may escape destruction.

Nits may be got rid of by wetting the hair with vinegar and carefully combing. Ointments and lotions containing mercury (such as white precipitate ointment) are effectual, but also dangerous, as they are very poisonous, and if used freely the poison may be absorbed by the skin. Brushes and combs which have been used, caps and other head wear, should be destroyed, and when the body is affected, thoroughly cleansing is necessary, and a complete change of underclothing—all that is taken off must be stoved, boiled or destroyed.

**Scabies** (Itch).—The insects burrow and lay their eggs in the skin and cause intense itching, especially at night, chiefly about the roots of the fingers and toes, the wrists and the belly. Sores and boils may be produced by the scratching. A hot bath should be given, scrubbing well with soap to break up the little burrows, followed by rubbing on sulphur ointment to kill the parasites, and this repeated four nights in succession, the ointment being kept on all night. All underclothing and bed-clothing should be boiled and other clothes should be stoved or boiled. For infants and those with delicate skins a weaker ointment is required. It is well to repeat the treatment in ten days or a fortnight, as some eggs may have escaped. The disease is seldom limited to one member of a family, and all who show any signs of it must be treated at the same time, or re-infection will occur.

**Ringworm** is caused by the growth of certain fungi belonging to the vegetable kingdom in the roots of the hair, and is known by a patchy or moth-eaten appearance, the scalp becomes scurfy and the hairs come out or break off short. It is most important that this should be dealt with on its first appearance, when the affected place is still small. The school authorities must be informed at once.

The affected part must be shaved, thoroughly cleansed, and the remedies ordered by the doctor perseveringly applied. A light washable cap should be worn, and the utmost care taken that the child sleeps apart and has separate towels, brushes, combs, etc. (which must be frequently disinfected to prevent re-infection), as the disease is very contagious. Treatment must be continued after apparent cure as long as the doctor considers it necessary, as fresh spores or seeds may develop if it is left off too soon.

[**Ophthalmia** (redness with discharge of matter from the eyes) is contagious, and communicated especially by the use of towels by one child after another. Special treatment is necessary, and children suffering from it must not attend ordinary schools. Any child with redness and gummy discharge from the eyes should be at once placed under medical inspection.]

Many deaths occur by young children being left even for a moment alone in a room when the fire is not protected by a fireguard, also from their drinking scalding water from the spout of a kettle. If a child's clothes catch fire, catch up a tablecloth, blanket, hearthrug or any thing woollen, throw the child on to the floor, and smother out the flames with the rug. Children should be taught as early as possible that if such an accident happens they must not run about, but lie down on the floor whilst calling for help, as by so doing the upper part of the body and the face are less likely to be injured by the flames.

In case of burns or scalds, if slight, at once apply some greasy material, oil, vaseline, on clean linen to the part, and cover with cotton wool and bandage; if severe, do not try to remove clothing, but wrap the burnt part in a blanket, or put it into warm (98°) water, send for the doctor, and give the child if suffering from shock (that is, pale, cold and half-conscious) sips of hot tea or coffee, and cover

warmly. If the inside of throat is scalded, let the child swallow some butter or sweet oil, and apply hot fomentations outside the throat. This is a dangerous accident, and a doctor should be called at once.

In surgical cases, if the dressing of a wound has to be done by the nurse, it is well to make the preparations out of the child's sight. It is sometimes a wise plan to cover over the little patient's face or to get someone to distract the child's attention. Pain must be avoided as far as possible (for instance, if a dressing has stuck it must be well soaked and not hurriedly pulled off), but too much time must not be spent in coaxing and soothing; if the dressing has to be done the sooner it is over the better.

To prevent the child interfering with bandages, etc., the hands may be muffled, or the arms confined to the body by a towel, or by putting the clothes on over them. The hands may be kept from the face (as in case of eczema) by putting on light splints, which prevent the arms being bent at the elbow. If a child have to be kept lying down, a piece of webbing should be put across the bed just below the pillow, and fastened to the bedstead on each side; and to this the child is secured by two armlets or short broad straps, padded and with buckle fastenings, passed under the armpits, round the webbing and over the shoulders to the front. It is well to connect the armlets by another piece of webbing the width of the child's back, otherwise they slip sideways. The trunk may be confined by a broad band, such as a folded roller towel, passing round the hips and fastened to the bedstead, but there must be no pressure of the chest or abdomen.

# CHAPTER VII.

## The Roller Bandage.

**Bandages** are used for many purposes—such as to support an injured part, as in case of a sprained ankle—to keep on dressings or splints—to restrain movement when such would be injurious, as in case of broken ribs. In courses on "First Aid" instruction is given in the use of towels, handkerchiefs, etc., as *Triangular Bandages*, which are very useful for many purposes. *The Roller Bandage* is made of a long strip of material, which should, as a rule, be rather open-wove and elastic, as in the ordinary "water dressing" bandage, but may be made of various materials, rubber, calico (from which the stiffening should have been washed), linen, flannel, etc. The breadth varies from ¾ inch to 4 inches, and the length is usually six yards.

**Rolling** is done quickly, tightly and neatly by a simple machine, but the nurse should be able to roll a bandage tightly and neatly with the fingers. This may be best done by taking each edge of the bandage between the fore finger and thumb of each hand whilst the bandage is held taut by another person, or by putting a weight on it.

**General Rules.**—1. See that your bandage is of the proper size and tightly rolled.

2. Stand or sit in front of the part to be bandaged.

3. Put the limb or other part to be bandaged into the position in which it is intended to remain. Alteration of position after bandaging is very painful.

4. Lay the *outside* of the end of the bandage on the skin.

5. *a*. Always bandage a limb from below upwards (*i.e.*

towards the shoulder or hip), otherwise the veins are obstructed instead of being gradually emptied, and swelling and pain are caused. *b*. Also from within outwards, otherwise the other limb or the body gets in the way. The outer side of the hand and forearm is the thumb side, and in describing, the palm is considered to be upwards or to the front. A nurse should be able to bandage with either hand.

6. Bandage with moderate firmness, and evenly, not tighter in one place than another. There should be no wrinkles.

7. Keep the bandage near the part, do not unroll too much.

8. If a mistake has been made, take off the bandage and start again.

The end should be tacked or safety-pinned. In some places it is well to tack the edges here and there. To take off a bandage, loosen the end and unwind, crumpling up the bandage in the hand, and passing it from one hand to the other as it comes off, to prevent tangling.

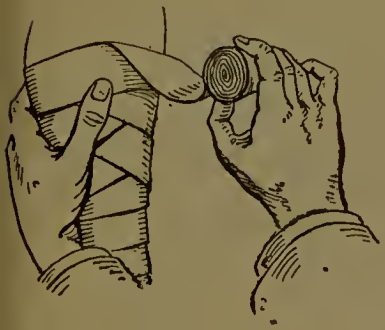
**Methods of applying the Roller Bandage.**

1. **Circular.**—Every turn over the last as in the wrist.

2. **Spiral.**—Every turn overlaps two-thirds of the breadth of the last. This occurs when the bandage is applied in a slanting manner, as in the finger. When a bandage overlaps in this or any form the lower or exposed edges must not be slack, and must be parallel and at even distances from one another.

3. **Reversed Spiral.**—This is necessary where a limb increases in size, as the forearm. Having fixed the bandage below with circular turns round the wrist, the lower edge of that part just applied to the limb is held firmly down by the thumb of the free hand, whilst about three inches of bandage is unrolled and *slackened*. The hand holding the bandage now makes a turning or tossing move-

ment, so that the bandage is twisted downwards on itself—and it is then drawn firm and applied to the limb. Care must be taken not to "reverse" over a bony part, such as the shin.



REVERSED SPIRAL.

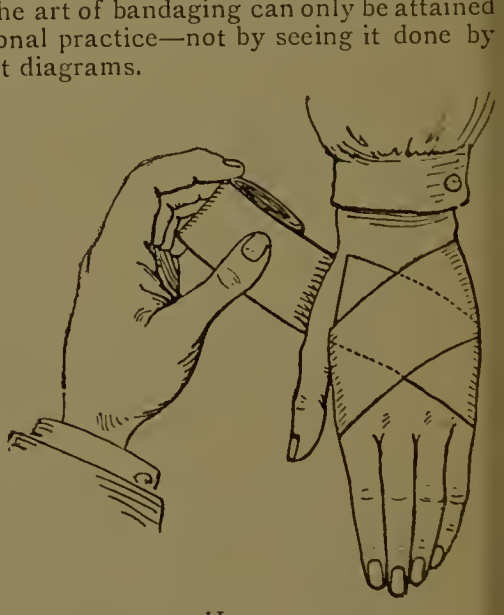
FINGER.

4. The **figure of eight** is used in certain situations—such as the knee, and is done by allowing the bandage to follow the natural shape of the part—the bandage going upwards one side, straight round at the back and down across the front, straight round at the back and then upwards as before, and so on, each completed turn overlapping the one before it.

5. **A Spica and a Diverging Spica** resemble a figure of eight, and are used in certain situations when they will be described.

The following directions are given as a help when practising and for the sake of uniformity, but it must be understood (1) that bandaging cannot be learnt by reading descriptions, which, however elaborate, are more or less unintelligible to those who have not had practical instruction—and (2) that the art of bandaging can only be attained by industrious personal practice—not by seeing it done by others, or looking at diagrams.

THUMB.



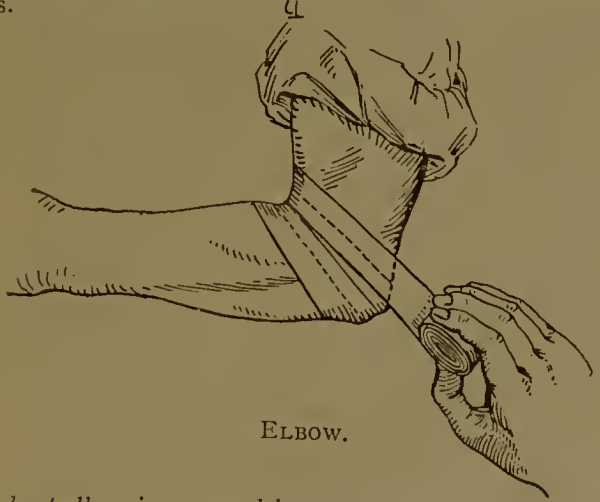
HAND.

**Fingers** ($\frac{3}{4}$-*inch*).—Take two turns, leaving out a loose end, round the wrist, carry over back of hand to root of finger, then by one or two open spirals to its tip—bring back from tip to root by close spirals, cross over back of hand, and turn round wrist, knotting to the loose end.

All the *fingers* may be bandaged by beginning with the little finger, next taking a turn round wrist, then the ring finger, and so on.

**Thumb** (*spica*).—Fix round wrist, bring over back of thumb between this and forefinger, over the ball and down to and round wrist again and so on, until the ball is covered.

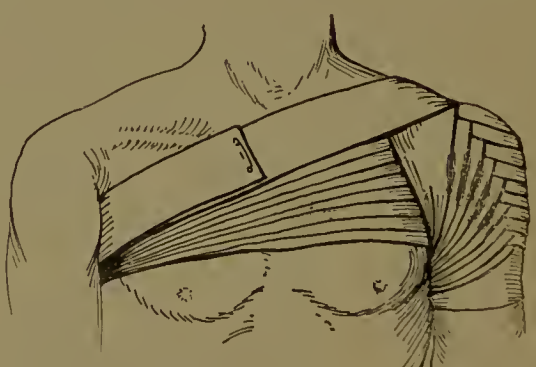
**Hand, Forearm, and Arm** (*2 to 3 inches, according to size of limb*).—Pass across back of hand from thumb near wrist to root of little finger, then across palm between thumb and forefinger, then across back of hand. Cover in hand by figure of eight thus, forearm by reversed spirals, elbow (if straight) by figure of eight and arm by reversed spirals.



ELBOW.

The *bent elbow* is covered by carrying the bandage round the point of the elbow, so that this rests in the middle of

the bandage, then bringing the next two turns so that the upper edge of the next turn and the lower edge of the following one are on the point of the elbow (diverging figure of eight) and so on, the first turn being thus covered in completely, and the others for two-thirds of their breadth.



SHOULDER.

**Spica for Shoulder** (3-*inch*).—Some wool should be placed in the armpits. Take a turn round the arm (if not already bandaged), then across the back to the opposite armpit, across the chest to the lower part of the shoulder, and under the armpit to the front. Repeat till covered.

This bandage is sometimes applied from above downwards, or with the loops round the neck, instead of under the opposite armpit.

**Capelline.**—A double-headed roller, made by tacking the ends of two 2-inch bandages together. Stand behind the patient, who should be sitting. Take a roller in each

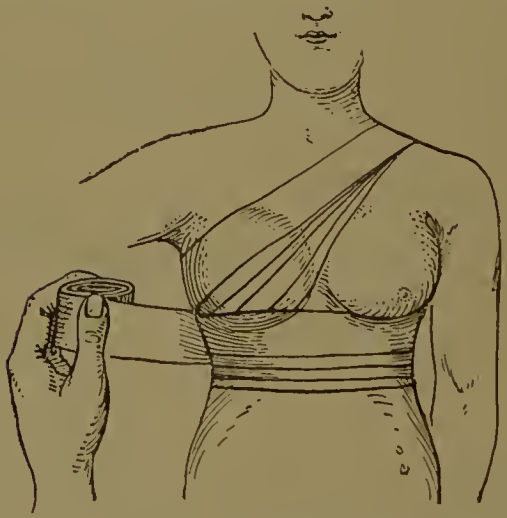
hand, lay the outside of the middle part on the forehead just above the eyebrows and bring round above the ears, crossing at the back of the head. Then keep one roller going round and round the head so that it crosses and fastens down at the forehead and back of the head, the rest of the bandage, which is brought from the back over the middle of the top of the head to the root of the nose (where it is crossed by the first roller), then back again rather to one side so that the first band is half covered, next from back to front, covering the other side of the first band and so on. When completed the first band should

CAPELLINE.

EYE.

be entirely covered, and the others for two-thirds of their breadth. If the bandage is not brought down as low as possible both in front and behind, it will slip off.

**Eye** (*2-inch*).—Take two turns round the head, starting above the root of the nose and carrying the bandage *away* from the injured eye, over both ears, and well down on the back of the head. When coming round again bring *under* the ear on the same side as the affected eye, then upwards over the eye, and fasten on forehead.



BREAST.

**Breast** (*3 or 4-inch—Put some cotton wool around the nipple*). **Single.** Start below the affected breast and carry the bandage *across the chest to the opposite side* and round the back, repeat, making a circular turn to fix. Then carry the bandage from below the affected breast to the opposite shoulder, over it and down across the back. Make the next turn round the body and the next over the breast and

up to the shoulder and so on alternately, each turn higher than the one before it.

**Double.**—Take a turn from left to right round the body, under left breast, and over right shoulder and round to right side again to fix—carry round towards back, but instead of completely encircling the body bring across back to *left* shoulder, across chest, *under right breast* and round the back to left side, round the body, then under the left breast and so on.

**Foot and Leg** (3-*inch Bandage*) (*Without Covering Heel*).—Take two circular turns round above the roots of the toes, cover the instep by reversed spirals, the ankle by figure of eight, leaving out the heel, and the leg by reversed spirals.

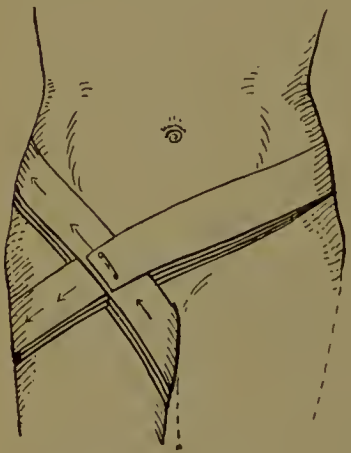
*Covering Heel* (*as for bent elbow*).—Bring the bandage so that the point of the heel catches the middle of the bandage, then round the ankle in diverging figure of eight, arranging so that the *upper* edge of the next turn and the *lower* edge of the succeeding one are on the point of the heel—the first turn of the heel being thus quite covered in.

**Knee** (3-*inch*).—Take a turn below the knee, then behind it, up to inside of the thigh above the knee ; take a turn round the thigh, and then down across the knee-cap to below the knee again ; continue in figures of eight until the knee is covered.

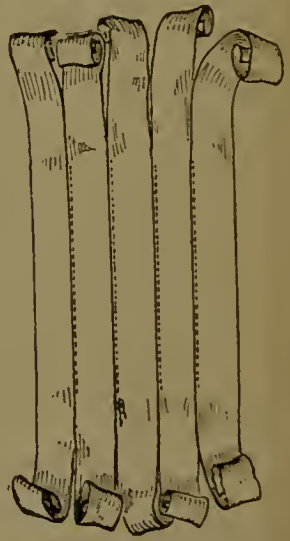
**Thigh** (3-*inch*).—By reversed spirals.

**Spica for the Hip** (3 or 4-*inch*).—Take two turns round the thigh (from within outwards), then carry the bandage round to the lower part of the back, and round on the opposite side just below the crest of the hip, to cross at the groin. Bring round groin, overlapping last turn, and so on.

**Many-tailed Bandage.**—This is useful, for the limbs or trunk when dressings have to be often applied and movement is injurious, as in case of a burnt arm. Either (1) take a piece of calico, flannel, etc. the width of the part required to be bandaged, and long enough to go one and a



Spica (Hip).



Many-tailed Bandage.

half times round it; then tear it across from each side into strips, the tears reaching to within an inch or two of the middle; or (2) cut from an ordinary bandage strips of the above length, and as many as will cover in the part, allowing for overlapping: these are then tacked to the front of a central piece, highest one first, and every strip overlapping the one above it. The middle is applied to the back of the limb or trunk, and the cross pieces folded over in order, beginning below.

# APPENDIX.

## DRINKS.

**Water.**—The "flatness" of boiled water may be removed by shaking it thoroughly in a clean wine-bottle (half-full).

**Water** aërated in a seltzogene or "sparklet" apparatus.

**Iced Water.**

**Soda** or other **Mineral Water.**

**Water** with **lime juice** or **fruit juice** or **syrup** added.

**Apple-water.**—Clean six juicy apples, slice them (without peeling or coring) into a large jug. Lemon rind (cut very thinly) or cloves may be added. Pour on one quart of boiling water. Sweeten, and, when cold, strain.

**Lemonade.**—Wipe two lemons clean and peel *very thinly*. Squeeze the juice into a jug and add the peel. Pour on a pint and a-half of boiling water, cover, and stand aside to cool, adding sugar to taste, then strain. To avoid a bitter taste, care must be taken that no pips or white skin are put in the jug.

**Barley-water.**—Take 2 ozs. pearl barley, wash well in two or three waters. Put into a stewpan with one quart of cold water. Let it boil gently for two hours. Peel half a lemon very thinly (do not cut into the white skin), put the lemon peel in a jug and strain the barley-water into the jug. When cold take out the peel and add sugar, if liked. If thin barley-water is required use two quarts of water. The barley may be used for puddings, soups, etc. afterwards. If "patent barley" is used, mix one ounce

with a wine glassful of cold water ; pour into the stewpan of boiling water and boil for five minutes, stirring all the time. Omit lemon if used for babies.

**Rice-water.**—Wash 2 ozs. of rice, boil gently in a quart of water for an hour ; a little cinnamon, lemon, or cloves may be added to flavour. Strain and sweeten. The soft rice may be used for soups, etc., or rubbed through a sieve to thicken the drink, or mashed up, put into a basin rinsed out with cold water, and eaten as a jelly.

## MILK.

**Iced, or with Barley-water or Soda-water.**

**Milk with Cinnamon.**—Boil in the milk enough cinnamon to flavour, and sweeten with white sugar.

**Curds and Whey.**—Warm a pint of milk to blood-heat (98° F.), stir in a little sugar and a teaspoonful of essence of rennet. Pour into the dish in which it is to be served, and leave till cool. This may be flavoured with a few drops of essence of lemon, grated nutmeg, etc., and a little thick cream poured over it.

**Whey** is obtained by breaking the above up with a fork and straining.

**Alum Whey.**—Add a teaspoonful of powdered alum to a pint of hot milk ; break up and strain when cool. It is useful in diarrhœa.

**White Wine Whey.**—Boil a breakfastcupful of milk ; add a wineglassful of sherry without stirring, and again bring to the boil for three minutes ; strain through muslin. Sweeten if desired.

**Tea, Coffee, Cocoa** may be made with boiling milk, instead of water. This may be made into a jelly with gelatine.

## MILK WITH FARINACEOUS FOODS.

**Rice Milk.**—Boil a tablespoonful of rice in a double saucepan with a pint of new milk for two hours, adding more milk to keep to a pint. Strain, and flavour with a little nutmeg or sugar.

**Blanc Mange.**—Put on the fire a pint of milk in a double saucepan, with an ounce and a half of loaf sugar and a strip of lemon peel. Mix four tablespoonfuls of cornflour smoothly with a tablespoonful of cold milk. When the milk in the saucepan is boiling stir in the cornflour quickly, and let it boil two minutes, stirring continually. Rinse a pint basin or mould with cold water, pour in the cornflour and milk (taking out the lemon peel), and turn out when quite cold.

**Milk Gruel.**—A tablespoonful of patent groats made into a smooth paste with two tablespoonfuls of cold water. Pour into a saucepan containing a pint of boiling milk; stir whilst boiling for ten minutes. Salt or sugar may be added to taste.

**Bread and Milk.**—Patients generally prefer the bread cut into thin slices, not broken up. The boiling milk should be poured over the bread in a basin; cover with a plate and keep by the fire for ten minutes.

## MILK WITH EGGS.

**Egg and Milk.**—Beat up the egg (with a little sifted sugar if liked). Add the milk, cold or warm, and *strain*.

**Custard, Boiled.**—One pint milk, two large eggs, one ounce sugar. Whisk all together in a basin till thoroughly mixed, put into a double saucepan, or into a jug in a saucepan of water, place on the fire and stir until it thickens. Strain into a jug, and go on stirring till cold.

**Custard, Baked.**—One pint of milk, two eggs, one ounce sugar. Beat up well, put into a buttered dish and bake in a *very slow* oven until it sets. If the oven is too hot it will curdle. A little cinnamon may be powdered over it.

**Eggs, Lightly boiled.**—Put into cold water, bring it to the boil, and after one minute take out the eggs.

**Lemon Sponge.**—Three new-laid eggs, ½ oz. gelatine, one lemon, ¼ lb. powdered sugar. Grate the rind of the lemon and add the strained juice. Dissolve the gelatine in quarter-pint of boiling water, set it to cool, and when nearly cold stir in the whites of the eggs, which should have been whisked to a stiff froth ; also the lemon and sugar. Beat all together, and put to set in a well-wetted mould (a basin will do). Make a custard from the yolks of the eggs and serve with the sponge.

**Scrambled Eggs.**—Melt enough butter in a pan to cover the bottom. Break the eggs into a cup, add a dessert-spoonful of milk for every two eggs, beat up well and pour into the pan, stirring over the fire until set. Herbs, minced meat or fish, etc., may be added.

**Oatmeal Porridge.**—Boil a pint of water, adding a little salt if liked, stir in very gradually two ounces of oatmeal, keep at the boil for half an hour, stirring occasionally to prevent burning. It should be taken with treacle or milk.

**Boiled Rice with Egg.**—Wash thoroughly half a breakfastcupful of rice, and put it into a double saucepan (or a covered jar in a saucepan) with enough water to cover it. When the rice is nearly done, if any water remains, pour it off, and fill the cup with milk, adding a little salt. Let the rice cook very slowly until done. Beat a new-laid egg thoroughly, and the last thing, before taking the rice from the fire, stir in the eggs as lightly as possible. Serve hot, with sugar or cream.

**Tapioca Jelly.**—Soak one breakfastcupful of tapioca in three cups of cold water overnight. In the morning put it in a double saucepan with a cup of hot water, and let it simmer until perfectly clear, stirring often. Add sugar and lemon-juice to taste. Pour into cups, and set away until perfectly cold. Whipped cream and sugar may be served with this jelly.

**Rice Pudding.**—One ounce and a-half of rice, a tablespoonful of sugar, one egg, one pint of milk. Put the rice and milk in a saucepan on the fire and stir occasionally till the rice swells. Let it cool, then stir in the egg and sugar, then turn into a buttered pie dish. Bake for about a quarter of an hour. Grate a little spice over it. Sago and other puddings are made in the same way.

**Mutton Broth.**—Wash 1 lb. scrag of mutton. Put into a large saucepan with 1½ pints water (cold) and set it on the fire. Wash ½ oz. pearl barley or rice. When the water boils add this with onions or other vegetables, and a little salt. Draw the saucepan to the side of the fire and let it simmer for 2½ hours, skimming the scum as it rises. Pour off the broth into a basin, remove the fat when cold with a spoon, or if wanted at once with blotting-paper or whitey-brown paper. The barley or rice may be omitted and the broth strained, or these may be boiled separately, and added after straining, if there is any objection to particles of meat.

**Beef-Tea.**—Take some good lean beef (not "gravy beef"), trim off any gristle or fat, and scrape the rest into shreds. Weigh the scraped meat and put into a jar with cold water (1 pint of water to 1 lb. of meat). Leave for half an hour, then cover the jar tightly, and place in a saucepan of water over a slow fire. For an hour the beef-tea should not be

*near* boiling (it should be below 167° F.), and from time to time it should be stirred and the meat squeezed against the side of the jar with the fork. Then bring it quickly to the boil and at once take it from the fire. Pour off the beef-tea (do not strain it), squeezing the meat with a spoon as dry as possible. Any fat should be removed from hot beef-tea by laying on the top a piece of whitey-brown "curl" paper, and renewing this until it has all been soaked up, or from cold beef-tea with a spoon. The reason for soaking in cold water and delaying boiling is to dissolve out as much as possible of the nutritive parts (proteid) of the meat. If boiled too soon this is hardened in the meat and cannot dissolve out. It is boiled up at last to improve its appearance and flavour. The dissolved proteid is then coagulated in fine particles, and if the beef-tea is strained these would be left behind. If beef-tea "jellies," it shows it has been made from gristly meat and boiled too much. The meat left after making the beef-tea still contains a great deal of nourishment and may be grated and used for soups, or eaten with rice, etc. Bovril, Liebig's Extract (Lemco), and other meat extracts may be made with hot *milk* instead of water; salted and peppered to taste.

**Raw Meat Juice.**—Sometimes ordered for infants and in cases of debility. Mince good lean beef, let it stand in its own bulk of cold water (half a pint to half a pound) three hours in a cool place. A pinch of salt and five drops of dilute muriatic acid assist in preparing it. Then strain through muslin, squeezing the juice out forcibly. If given to any one but an infant it should be put into a coloured glass. A good and cheap substitute is white of egg, well mixed with twice as much water, strained, and flavoured with a little Liebig's Extract dissolved in hot water, or otherwise.

**Tripe in Milk.**—One pound fresh (dressed) tripe, wash in cold water and cut into small squares, removing the fat. Put into a saucepan with one pint of milk. Let it come to boil slowly, then skim and remove to side of fire for two hours or longer, until tender, stirring and skimming occasionally. Take out the tripe and put it on a warm dish by the fire, then mix a dessertspoonful of flour to a paste with cold milk, stir it gradually into the hot milk and let it boil, then pour it over the tripe. Salt and pepper to taste. If allowed, onions may be stewed with the tripe.

**Milk Jelly.**—Cut a dressed cowheel into small pieces, put into a jar with a quart of milk and a little lemon peel or other flavouring. Put a lid on the jar and tie paper down tightly over it. Stew in a very slow oven or by the side of the fire at least three hours. Strain and sweeten, then put aside until set. (The cowheel may be eaten with onion sauce and the bones used for soup.)

**Lentil Soup.**—Take one pint of red lentils, wash, and soak overnight in cold water. If the water is hard add a pinch of bicarbonate of soda. Put into a saucepan with a sliced onion and other vegetables, and two quarts of cold water (with a pinch of soda if necessary). Simmer for an hour and a-half. Rub through a sieve with a wooden spoon. Pour back into the saucepan, add a small piece of butter, salt to taste, and warm up. If there is any "stock" (such as water in which meat has been boiled), it may be used instead of plain water.

**Haricot Beans.**—Soak a pint overnight in cold water. Place in a saucepan on the fire, with a quart of cold water (adding a little soda if the water is hard). When boiling remove to the corner and simmer till tender—this may take two or three hours. They may be eaten with butter, or melted butter and parsley, and are excellent with roast mutton, or made into a thick soup like lentils, or lightly

fried (after boiling) with a little fat bacon and sliced onions.

The *water* in which haricots, green French beans, and most other vegetables have been boiled contains a little nutriment, also flavouring and vegetable salts, and should not be thrown away, but used for making soups.

**Stewed Chop.**—Cut off the fat, put into a stewpan with just enough water to cover it, stew *very slowly* until quite tender. Stir a little flour and chopped parsley into the liquor to thicken.

A chop or small piece of meat may be stewed in its own juice by putting it into a jar (such as a salt jar or jam pot) which can be closely covered by a lid, or by a piece of thick buttered paper tied over it. This is put into a saucepan with hot water, which must be about two inches below the top of the jar. Cover the saucepan and keep gently boiling for two or three hours. Any kind of meat or fish may be done as above. Vegetables, seasoning, etc., may be added; if so, some water must be put into the jar.

## DRESS.

*The following is from a paper by* Fräulein Wilke, *Head Mistress of the Physical Training College, South Western Polytechnic, and is inserted by her permission:—*

"The need of reform in the clothing worn by the children, and in particular by the girls attending our Board Schools, is very little realized. Few people, indeed, are aware of the extraordinary number of unhealthy and unnecessary garments that the children habitually wear; yet the following account of an investigation of the clothing of fifty school girls, of ages varying from eight to twelve years, bears striking witness to the advisability of adopting a simpler and more hygienic mode of dress. Of

these fifty girls, forty-five of the number were found to wear the following garments :—

"A pink flannelette chemise.

"A pair of pink flannelette drawers.

"A pair of stays with steel busks.

"Two pink flannelette petticoats made with heavy pleats round the waist.

"One red flannelette petticoat, and finally a dress which was usually too tight across the chest!

"When one considers the double bands of the under-garments and their numerous pleats, it is plain that each child had from twelve to twenty thicknesses of material round her waist! The remaining five of the fifty had two petticoats instead of three, but some of them had an extra vest.

"In strong contrast to the above are the few and simple garments proposed for the reform dress. It need consist only of :—

"(1) A pair of woollen combinations.

"(2) A pair of woven or knitted knickerbockers, to be made without opening and threaded with a narrow elastic round the waist to keep them in place.

"(3) A woven or knitted jersey to be drawn on over the head.

"(4) A tunic made in two straight pieces and gathered at the neck into a narrow band.

"The advantages of a costume such as this are numerous. It is light and warm, flexible and porous. It is durable and consequently cheap; clean, because easily washed; neat, for there are no buttons and button-holes or anything to get untidy. Then, too, any girl over ten years of age ought to be able to make these clothes for herself, and this she should be taught to do at school.

"Carried out in dark blue, this dress is both pretty and useful. The blue should be of indigo dye, which is absolutely fast colour. The knickers, if preferred, can be made of serge, but the woven or knitted garment has the advantage of being more porous. Simple as the garment is, there is ample scope for making it both elegant and artistic if desired.

1 2 3

DRESS.

"No corsets or stays of any kind should be allowed.

"Sketch No. 1 shows the knickerbockers and jersey
"Sketch No. 2 shows the costume complete.
"Sketch No. 3 shows the tunic.

"Children dressed in this manner have the free use of their limbs, for there is no pressure anywhere, and it allows room for the full development and expansion of the body. They will grow up stronger, healthier and more beautiful women, thus it will be of untold benefit, not only to themselves, but also to the generations yet to be."

It is advisable that the combinations should be *closed*, especially for young children.

Garters are objectionable, as they interfere with the return of blood from the feet and legs, and help to cause chilblains, varicose veins, etc. The stockings should be kept up by suspenders. A bodice of some porous yet strong material may be worn between the combinations and jersey to which the suspenders are attached. This plan, of course, adds another garment and multiplies fastenings, but suspenders which are complete in themselves are rather too complicated for general use, especially of children, and if the knickers are of thick material, as in winter, they can be buttoned to the bodice which is better than keeping them in place by elastic round the waist.

## SPECIMEN OF NURSES' NOTES.

**21st June.**

7 a.m. T. 101.6; P. 100; R. 24.
8. Medicine. Baked apple.
9. Milk ʒvi. with cocoa. Bread and butter, one egg.
9.30. Washed face and chest.
10—11.15. Slept quietly. 11.15 Milk ʒiij. with soda-water.
11.30. Doctor's visit.
12. Medicine. B.O. (bowels opened), rather constipated. Made bed.
1 p.m. T. 102.4; P. 108; R. 26.
1.30. Beef tea ʒx with rice. Sponge cake and custard ʒii.
2—2.30. Dozed.
3—3.45. Dozed. Lemonade.
4. Medicine. Feet washed.
4.30. Milk ʒiv. with tea; two biscuits.
6. Restless—complaint, griping in abdomen Fomentation applied—relief of pain.
7. T. 103.2; P. 112; R. 27. Headache. Cooling lotion to forehead. Milk ʒiv. with barley water.
8. Face sponged Medicine.
9. Milk gruel, ʒx. Pill.
10—11. Dozing.
11—12. Awake; slight dry cough. Medicine. T. 102.2; P. 108; R. 25.

**22nd June.**

12—3 a.m. Slept quietly.
3.30. Milk ʒvj. with barley-water.
3.45—5 45. Slept at intervals Medicine at 4.
6. T. 100.8; P. 96; R. 24. Milk ʒiv. with tea. Cough rather troublesome—no expectoration (**ask doctor**).

**Totals.—Milk,** 41 oz.; **B. Tea,** 10 oz.; 1 egg. **Slept** 8¼ hours. **B.o.** 1. **Urine** a little over Oifs—high coloured, clear when passed, but specimen thick on cooling.

Charts may be procured with separate columns for food, sleep, doctor's instructions, etc.

Dr. Clement Dukes has calculated that a child at the age of about 11 years should have daily about

| | |
|---|---|
| Bread, oatmeal, etc. | 13 ounces. |
| Sugar | $2\frac{1}{4}$ ,, |
| Fat (of meat), butter, etc. | $1\frac{1}{2}$ ,, |
| Milk | $1\frac{1}{2}$ pints. |
| Meat, fish, eggs, etc. | 7 oz. (cooked). |
| Potatoes | 5 ounces. |
| Green vegetables | $2\frac{1}{2}$ ,, |
| Puddings, cake, etc. | 4 ,, |
| Fresh fruit | $1\frac{1}{2}$ ,, |
| Honey, etc. | $1\frac{1}{2}$ ,, |
| Water | 15 ,, |

For boys over 14, or girls over 12, the above, except the milk, should be increased by about one-half.

N.B.—A slice of bread $5 \times 3\frac{1}{2} \times \frac{3}{4}$ inch = $2\frac{1}{2}$ ounces.

An ordinary plateful of meat = 4 ounces.

Six medium-sized potatoes = 1 pound.

One egg = 2 ounces.—(Hutchison).

Table *of Children's Average Heights and Weights (Without shoes and unclothed).*
(*From collected essays by the late W. Squire, M.D., F.R.C.P.*)

| Age. | Height. | Weight. | Age. | Height. | Weight. |
|---|---|---|---|---|---|
| Years. | Inches. | Lb. | Years. | Inches. | Lb. |
| Birth | 19 | 7 | 8 | 47 | 52 |
| 1 | 28 | 21 | 9 | 49 | 56 |
| 2 | 32 | 28 | 10 | 51 | 60 |
| 3 | 35 | 31 | 11 | 54 | 67 |
| 4 | 38 | 35 | 12 | 56 | 72 |
| 5 | 41 | 40 | 13 | 58 | 80 |
| 6 | 43 | 44 | 14 | 60 | 90 |
| 7 | 45 | 48 | 15 | 62 | 100 |

# INDEX.

# A Companion Work.

**FIRST AID.** By R. J. COLLIE, M.D., and C. F. WIGHTMAN, F.R.C.S. A Manual for use in Ambulance and First Aid Classes in Primary and Secondary Schools. Cr. 8vo, Cloth. 3rd Edition, 30,000. 8*d*. net.

---

**Dr. R. J. Collie's Life-Size Demonstration Diagrams.** Specially designed for Lecturers to Students of Physiology, Ambulance, and Home Nursing Classes. This Series has been produced by a staff of Clinical Artists under the immediate direction of DR. R. J. COLLIE, Medical Superintendent to the London County Council, from Studies made at the London Hospital.

Chart I. **The Skeleton**, on Rollers and Varnished. Size, 30 in. × 80 in. By ROBERT J. COLLIE, M.D. £1 1s.

Chart II. **The Muscles, etc.**, on Rollers and Varnished. Size, 30 in. × 80 in. By ROBERT J. COLLIE, M.D. £1 1s.

Chart III. **Scheme of Circulation**, on Rollers and Varnished. Size, 30 in. × 80 in. By ROBERT J. COLLIE, M.D. £1 1s.